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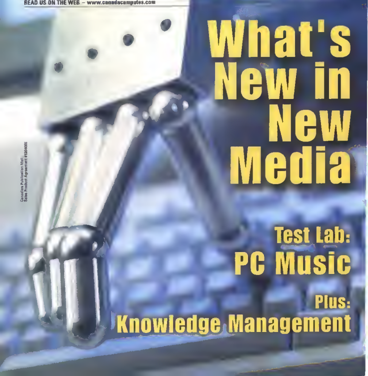

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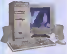

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Shifting technology landscape at PC Expo

What's happening to the computer industry these days? If PC Expo, held in New York in late June, was any indication the industry has put its faith in the paradigm of non-stop computing and is developing products and services to catch any piece of how consumers and businesses might want to take advantage of that.

Palm Computing chief operating officer Alan Kessler summed up one prominent theme during a keynote address when he quipped that a more appropriate name for the show might have been PDA Expo. Personal digital assistant device vendors, such as Palm, Handspring, Casio, Hewlett Packard, and Compaq were joined by a slew of peripheral makers and service providers Innogear (http://www.innogear.com), for example, showed a line of Springboard modules for the Handspring Visor, including an MP3 player called the minijam. Casio was previewing its latest Pocket PC, the EM 500, which should be available in August or September. The EM-500 will use relatively new but tiny (24x32 mm) SanDisk multimedia card memory modules for expansion

Burnaby B.C.-based Infowave Software announced FirstHand wireless application protocol (WAP) software that allows WAP-compliant devices like phones and PDAs to connect to a Microsoft Exchange server Infowave has partnered with another B.C. company, Sierra Wireless of Richmond (which makes the AirCard wireless modem), and Compaq, to come up with a wireless computing solution based on Compaq's iPaq Pocket PC.

Offering a similar type of solution is Palm, which announced the Mobile Internet Kit, a US$50 software upgrade that will give existing ROM-upgradeable Palms much of the functionality built into the wireless Palm VII. Included are a POP3- or IMAP4-compliant email package called MultiMail and a WAP browser Upgraded Palms will be able to establish a datacomm link with a GSM phone either through the infrared port or a cable. Palm says some GSM phone models from Motorola, Nokia and Ericsson can already establish an infrared connection with the Palm.

Kessler gave his keynote at an event called ImageScape 2000, a showcase for companies involved in digital imaging, where he also demonstrated the Kodak PalmPix an add on digital camera module for the Palm With the PalmPix any one in the field could take a photograph with their Palm then, using the Mobile Internet Kit email that picture (a 640x480-pixel colour image compressed to about 30KB) to someone.

In many ways, the theme at the ImageScape breakfast event mirrored the trends going on at the main show extend hardware and connectivity capabilities to use Internet technology for everything—data storage, data communication even application serving. Thus in the case of digital photography a number of sites offering Web storage of photos is growing.

Photo Web sites are nothing new however these sites are adding, increasing levels of functionality For example, PictureIQ (http://www.pictureiq.com) offers online photo editing tools to allow users to perform simple tasks like red-eye removal. It also allows Web surfers to print photos directly from its site without having to first save the image to the hard drive Likewise, PhotoWorks (http://www.photoworks.com) allows Web visitors to perform basic image editing tasks, as well as apply special effects and print.

Nonstop computing also means being able to use portables for extended periods, and picking up on this goal were notebook vendors in the Transmeta Corp booth showing prototypes running Transmeta's x86-compatible Crusoe chip The huge benefit of the Crusoe chip is its low power consumption IBM was demonstrating ThinkPad 240 subnotebooks running Crusoe chips instead of Pentium III processors The IBM spokesman said using the Crusoe chip can extends battery life from around three hours to seven or eight. The Crusoe achieves x 86 processor compatibility through a code morphing software layer in the ROM, which in effect translates the x 86 software instructions (for example those coming from Windows or a Windows application) into instructions the Crusoe processor can act upon

Compatibility and performance are the unanswered questions about this new chip, but the IBM spokesman said the company has been optimistic about the results it has been getting in its compatibility and performance tests.

Other show items:

- Sceptre showed tiny desktop computer called the Slim Sounds. The 450 g (1 lb) unit, which was slightly bigger than a Walkman portable cassette player, houses a Pentium III processor hard drive up to 256 MB of RAM, a video card with 4 MB of video RAM, and 16-bit stereo sound. An expansion unit, about the size of a portable CD player, includes floppy and CD-ROM drives, two USB ports and a parallel port.
- DVD RAM is finally getting some respect, as more than 50 companies took part in a DVD-RAM showcase Among the participants were digital video product developers Dazzle Multimedia and Pinnacle Systems with solutions that allow video producers to burn their productions onto DVD-RAM discs.
- On the Web-print convergence front, Digimarc Corp was showing off its MediaBridge, which embeds an imperceptible pattern into a printed image—say within an advertisement. A computer user can then hold the page up to an Internet camera hooked to the computer and the pattern will trigger a URL, taking the reader/surfer to the advertiser's Web page MediaBridge technology debuted in the July issue of *Wired* magazine.

Interesting times ahead
David Tanaka,
Editor

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Paint Shop associations

After reading your glowing review of Jasc Paint Shop Pro, I decided to check it out. When I got to the Jasc Web site, I was disappointed to see that it was only a 30-day evaluation, but I decide to download it anyway and have a look at it, since the only paint program I had running was Microsoft Paint. After downloading I checked out the program thoroughly I then decided to uninstall the program, which in itself is no big task. Then when I went to work on my Web page I found that all of my JPEGs and GIFs were changed to accept Paint Shop Pro only even after I uninstalled the program. As well, the icons were no longer the usual JPEG and GIF style. Instead, I now have an icon that looks like the Windows flying window on white paper, and when I want to view the GIF, I have to choose which program to open it in.

What has happened here? Why did this happen even after I uninstalled the program? How do I change it back to the way it was?

Can you help me, this is really racking my mind I have done nothing but think about what mistakes I may have made by downloading this program, it is driving me to an ulcer.

Any help that you may be able to pass along to me would be greatly appreciated.

Shawn Bull

TCP replies. Many applications will "take ownership" of various file types. Some programs will ask for your OK before doing so, but most programs won't. And as you've discovered, some will not return your system back to the way it was as part of the uninstall routine. With proprietary file extensions like .xls, for Microsoft Excel, this is not a problem, because you typically want to open an .xls file in Excel. With more common file types, like JPEG or GIF a number of programs will open them, so usually the file types become associated with the latest program you install.

Here's how to fix this in Windows 98:

- *Go to the Start button and access Settings, then Folder Options.*
- *From the Folder Options window, select the File Types tab Once on that page, you will see a list of "registered file types" in the main window As you scroll through these, you will notice that information about each appears in the "file type details" area.*
- *When you find the files you want to change (JPEG, for example) hit the Edit button, which will take you to another screen. Hit the Edit button on that screen, and make the necessary changes to the "application used to perform action" line.*
- *On the File Types page, you might find a listing called "Paint Shop Pro file" or something similar Within it will be a bunch of file extensions listed to that program (e.g. TIF JPEG, GIF) You can delete this file, then create new associations between the file types and the application you want to open them with.*
- *If you are clicking on the file icon and you get the Windows dialogue asking you which program it should use to open the file, select the application you want, and make sure the "always use this application" box is checked—this creates the association between the file type and the application, and once re-established, you shouldn't have any more problems.*

Kodak shortchanged

I have read your article on the Kodak DC290 and Olympus C 2020Z megapixel cameras (see "Two paths to megapixel quality" in the July 2000 issue) It appears to me that the DC260/265/290 cameras from Kodak are somewhat misrepresented. The basic user controls available through the back panel indeed are limited One feature that is seldom mentioned is that the shutter priority/aperture priority modes can be accessed from the Digita scripting environment.

Thus these camera models (DC260/265/290) are actually more flexible than some comparable models without the scripting capabilities.

For example I frequently take pictures of laboratory equipment. For that purpose I have created a special script to set up the camera and capture the image Such scripts can control a variety of settings such as f-stop, exposure, flash, etc. One can take this development a step further and create interactive user programs to set up, or capture images.

This is of course not a task for the novice user. Then again, selection of manual or shutter/aperture priority modes in today's cameras has almost vanished except on high-end models, showing us that few non professional camera users have an interest in these features.

Peter V Amerl
University of Calgary

DT replies: You are correct in saying that Digita offers increased flexibility to digital cameras that use it These include cameras from Kodak, Minolta and Hewlett Packard. Digita is sometimes referred to as a digital camera operating system It was developed by FlashPoint Technology Inc. and more information can be found at http://www.flashpoint.com

Ergonomics: the basics don't change

"The ergonomics of IT" (see *TCP* July 2000) contains the same old advice we've been hearing for years. As a professional software developer, I sometimes sit at a workstation for up to 12 hours a day and yet never encounter wrist, back or eye strains. My keyboard is at least 20 cm [7.8 in.] from the edge of the desk. This allows me to rest my arms while keeping my wrists straight, but not completely horizontal (My chair is low enough that I do not have to lean forward to rest my arms on the desk). The top of my monitor is higher than my eyes, however that's not as important as having a high refresh rate of at least 75 Hz. (Mine is set to 100 Hz.) Anything lower and you're asking for headaches, dizziness, and/or eye strain.

Terence Russell

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Companies still lagging in security

By Tom Venetis

There is a wide gap between how seriously Canadian companies say they are taking security and how much they are spending on putting security measures into place.

That was one of the findings of a recent International Data Corp. Canada Ltd. (IDC Canada) study of some 200 medium- and large-sized Canadian businesses, and their security perceptions and practices.

Den McLean, research manager for network support and integration services for IDC Canada in Toronto finds there is a "disconnect" between how many of the companies say they are paying attention to security issues, and the amount of IT resources and money they are devoting to the problem. In the study, nearly 75 percent of the companies surveyed said they are devoting a considerable amount of attention to network, data and Internet security.

"But I questioned that when I looked at the data more," McLean adds. "Less than 10 percent of their total IT budget is devoted to security. Security is not something that is designated as a separate line-item on their IT budgets."

McLean feels that the reason for this disconnect is that many companies are taking a reactive approach to security. Companies often wait until something happens, such as a hacker getting into a system and stealing or corrupting data, before they will take the necessary actions to protect a system.

For the most part, the majority of the companies surveyed said their greatest security threats come from viruses and the corruption and replication of data. But IDC Canada's McLean says that almost one in five companies reported some kind of external hacking in the past year.

According to McLean, one of the problems companies have in dealing with security issues is that while many have put into place individual security tools as firewalls or virus checkers, they have yet to develop a comprehensive approach to overall data and Internet security. There is a lack of complete security suites and expertise that companies can draw on to help them put the necessary tools and procedures into place.

Symantec's solution

This is what Symantec Corp. is looking to remedy with its newly announced Enterprise Security solution.

"The Enterprise Security solution is really a combination, a joining together of key functional technology areas where Symantec has been strong in," says Michael Murphy, Canadian general manager for Symantec Corp. in Toronto.

Murphy says companies used to have an easier time securing their networks and systems. Early networks never had to connect to the Internet and sensitive desktops and servers could be secured behind a locked door.

"But now you have people working from home and using cable modems and DSL connections to access these networks, so the network today is no longer centered or locked up," Murphy adds. "The perimeter of the network has now been extended because of the Internet."

The Enterprise Security solution covers three key areas of security: intrusion prevention, virus protection and content filtering. The virus protection part of the solution is built on Symantec's Norton Anti Virus technologies, while its content filtering uses technology acquired in Symantec's recent acquisition of UR Labs. It can monitor outgoing and incoming information to see if it contains sensitive or classified information such as trade secrets or sensitive business information.

Murphy says this feature should be especially welcomed by the corporate world, as a recent FBI report said that nearly 74 percent of all security breaches occur from inside an organization.

The intrusion prevention portion of the solution allows a company to map out and find vulnerabilities on their network.

However, because many companies lack the necessary expertise to install and maintain a security solution across a large enterprise, Symantec also announced the creation of a Security Consulting service. The service will help Symantec partners work with companies to put best practices and technologies needed into place for comprehensive security solutions. ❑

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WHAT'S NEW

Mavica includes built-in CD writer

We scoffed when Sony built a standard floppy drive into some of its Mavica digital cameras. A 1.44 MB floppy drive seemed too small to meet the storage needs of multi megapixel cameras. Now, Sony of Canada Ltd. may be the one laughing, with the announcement of its Mavica MVC CD1000 which includes a built in CD-recordable (CD-R) drive. The drive uses 3 5-inch discs that each hold up to 156 MB of data and can be read by a PC's CD-ROM drive.

The new Mavica model will capture 2.1 megapixel images (1,600x1,200) and Sony says each mini-CD will store up to 160 high-resolution images Each blank mini-CD will sell for $10 while the camera itself will cost about $2 500 when it becomes available in August

Among the features of this new model are a 10x optical zoom lens, the ability to store images in JPEG or uncompressed TIF formats and a battery good for 1 100 still images before it needs recharging

—*TCP Staff*

Black's goes digital

Over the next six months, Black Photo Corp plans to install 100 digital minilabs in its Black's Photography stores across Canada In early June, Black's SuperStore in downtown Toronto became the company's first facility to offer digital VividPrints.

Underlying the digital print service is the Fuji Frontier Digital Minilab. It accepts standard 35 mm and Advantix film negatives as well as digital image files on a variety of media including memory cards, floppy diskettes and Zip cartridges. According to Black's, the benefits of digital photofinishing include sharper prints, better tonal and colour rendering, and more even exposures.

—*TCP Staff*

Coming to an ISP near you: Dot.Station

Intel (www.intel.com/go/webappliance/) has announced the Dot Station a Web appliance that will combine Internet access, email and telephone functions. The company won't be selling them to individual consumers, however For now it will target Internet service providers (ISPs), which will in turn supply them to subscribers

The appliance includes the System Management Suite, which will allow service providers to remotely manage and upgrade the appliances as new functionality evolves. Also included are home organization applications

—*TCP Staff*

BMG to offer music catalogue online

SAN FRANCISCO—BMG Entertainment (http://www.bmg.com), the music and allied media division of Bertelsmann will offer its complete music catalogue via MusicBank's Web portal (http://www.musicbank.com) starting in late August.

The move is an interesting one, since it marks the first time BMG's extensive music catalogue will be available on the Net for download. Artists on the label include Christina Aguilera Whitney Houston and the Foo Fighters.

BMG said MusicBank will allow customers to store, manage and listen to their entire CD collections via the Web without having to encode or upload the content.

MusicBank said its system of verifying the ownership of copyrighted materials either through retailer verification of purchase or through physical possession, will allow consumers secure access to their content through a Web-based interface.

—*Newsbytes*

Dell sneak peeks digital audio receiver

ROUND ROCK, Tex —Dell Computer Corp has announced plans to sell audio receivers developed by S3 Rio Audio technology that will allow computer users to play MP3 music files on their home stereo system

The Dell Digital Audio Receiver which will be available in August, distributes music stored on a PC hard drive to other rooms via existing phone lines, the company said Dell becomes the third company to market a product using Rio technology, joining Nike and Boston Acoustics

The receiver driven by S3 Rio Audio technology, enables users to search, sort and play music on their PCs by artist, title, album playlist or genre. Able to support MP3 and Microsoft Windows Media Audio files, the receiver is equipped with a built in amplifier, customizable display and a remote control. The cost will be US$199 for those buying a receiver with a Dell Dimension computer package configured with a networking card and US$249 for customers purchasing the device for an existing system Dell said

—*Newsbytes*

IBM to ship 1 GB microdrives

IBM Corp has announced its plans to ship a tiny 1 GGB hard drive for small handheld computer devices, such as personal digital assistants (PDAs) and digital cameras.

According to a company statement, these microdrives will triple the storage capacity of such devices holding up to 1,000 high resolution photographs, 1 000 200-page novels or nearly 18 hours of high quality digital music on a storage unit the size of a quarter

"Using the new Microdrive, a company's entire multimedia product catalogue—as well as a suite of powerful e-business applications—can be carried around in a shirt packet," said Michael Kuptz IBM microdrive products director "Such vast capacity in such a compact size will dramatically change the way information technology and consumer electronics devices are designed and used, helping accelerate the worldwide adoption of pervasive computing."

To get an idea of how big a leap this is, the IBM Microdrive which can fit into most digital cameras can store almost 400 high-resolution images compared to the 16 images that fit on a 16 MB CompactFlash card

IBM said it would begin shipping limited quantities of the new hard drive, which will cost less than $500 to manufacturers this summer A retail release is scheduled for September

The new drive can also serve as a data exchange accessory for notebook computers desktop computers and printers according to the company. IBM says future applications may include wearable computers, electronic books, global positioning system receivers smart phones portable Internet music players and electronic wallets

Some of the manufacturers that have designed or plan to design devices compatible with the new microdrive include Acer, Casio Computer Eastman Kodak, Fuji Photo Film Hewlett-Packard, Minolta, Nikon and Sanyo Electric.

—*canadacomputes.com*

Adobe ships Illustrator 9.0

Adobe Systems Inc. (http://www.adobe.com) has announced that it is now shipping Adobe Illustrator 9.0 which it calls "a major upgrade." According to Adobe this edition of its vector graphics creation software features a number of enhancements to some of its more popular features

Illustrator 9.0 is available for an estimated street price of US$399 Current users can upgrade for an estimated street price of US$149 Registered users of Photoshop InDesign PageMaker and competitive software products can purchase Illustrator 9.0 for an estimated street price of US$249

—*TCP Staff*

Maporama offers worldwide mapping

PARIS, France—Looking for an online map of a European or North American country? Take a look at Maporama (http://www.maporama.com) which claims to offer the world's best selection of interactive maps, including a useful "driving directions" itinerary service for most countries.

The site is billed as a European geographic portal, although it includes resources for a growing number of other countries. By the end of summer it expects to host mapping resources for more than 180 countries, which will be accessible via regular Web and wireless Web including WAP (wireless application protocol)

In use the service does a lot more than offering mapping services as it also allows users to find their nearest store, restaurant or hotel.

The firm said that while street maps covering the whole of Europe have been available since the spring, new features now include door-to-door itineraries, how to find nearby sales outlets, as well as the personalization of Maporama services and geographic coverage

—*Newsbytes*

Publish your ebook at Barnes & Noble

NEW YORK—If you fancy yourself as a writer then barnesandnoble.com's Web site (http://www.bn.com) may be worth a visit as the firm has teamed with iUniverse.com a Net content firm, to allow Web publishing for its customers

A spokesperson for the Web bookseller said that the partnership marks the first time a top-tier bookseller has offered publishing services to its customers through the Internet.

Under the deal, iUniverse.com will power the upgraded Web site using cutting-edge publishing technology, including XML (extended markup language)

Barnesandnoble.com said the Web publishing arrangements for budding authors will also serve the large number of authors whose works are out of print.

This direct approach the firm said, allows works to be published on demand, and in turn pays higher royalties than traditional publishing methods.

Steve Riggio the company's vice chairman, said that the Barnes & Noble.com Publish Your Book program is a giant step on the road to the democratization of publishing, since it puts the power back into the hands of writers where it belongs.

Riggio added that the program uses the iUniverse.com system that takes manuscripts from initial submission through to book design, then from printing distribution and fulfillment of all orders, and royalty payments.

—*Newsbytes*

RealNetworks, Nokia team up

HELSINKI, Finland—Nokia (http://www.nokia.com) and RealNetworks Inc. (http://www.real.com) have hooked up to develop technology that will deliver Internet audio and video content to future mobile devices, the companies announced in late June

Under the agreement, the companies will use RealPlayer technology to bring content to Nokia's EPOC based communicators and smart phones when the devices hit the market next year Terms of the agreement were not disclosed.

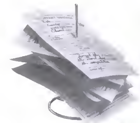
The project is aimed at "create once, broadcast anywhere" content delivery, said RealNetworks' systems marketing director Peter Zaballos. "Our vision of the Internet as a mass medium is exactly that. The next wave for society as a whole is not special to the computer All the company's energy has been completely focused on this," Zaballos told Newsbytes.

There are nearly 500 million mobile phone subscribers worldwide and many analysts predict that number will double within two years Just this week Nokia Motorola and Ericsson – the mobile industry Big Three announced a joint venture with Psion to create a company called Symbian The project will develop wireless information devices to drive the convergence of mobile computing and wireless technology, enabling Internet access messaging, information access with a device that fits in a pocket or purse.

Driven by such partnerships and alliances, the mobile phone industry touts its products as becoming more important than PCs. "The future will be mobile" is a common quote from inside the mobile phone industry but was attributed in April to Atte Miettinen, marketing and operations manager of mobile e-services bazaar at Hewlett-Packard, one of the world's largest PC makers He believes the most important inventions of the 20th century are the Internet and the mobile phone not the PC.

Consumers see a big future for mobile devices, too. According to a recent study by Cap Gemini America 78 percent of 1 000 current Internet users plan to use wireless data applications within the next 6 to 12 months.

—*Newsbytes*



9:15 a.m. "Client called. Urgent. Did you get her e-mail about new orders for Calgary office? Asked her to resend."

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The question of content

Suddenly, the appetite for new media content seems insatiable. What and who is driving the demand?

By Chris Knam

Whether it's text based or full blown streaming video, "content" is in demand on the Internet. What's fueling the cries for content? Innovative software and increasing bandwidth may have widened the scope of what's creatively possible but that doesn't explain the growth in demand

One explanation may be in the novelty of it all. Content of the bandwidth hungry variety—streaming video, audio, and Flash animations—are new, and have a high "gee whiz" factor, which is something that has never been a liability in the world of computers.

Commerce is another engine driving the content industry Businesses like content because it attracts visitors to e-commerce sites Compassion brings an appetite to the table as well, as activists use the Internet to promote social justice issues. Not least of all the factors driving demand is creative freedom. Independent producers love the power to create and disseminate their own projects without the money or permission of the media barons.

So, content is more than a streaming video, a MP3 file, or a JPEG of Aunt Martha's cat. It's the messages of an interactive medium

What is content?

One of the vexing problems concerning content is defining exactly what it is With television, magazines and radio, no matter how entertaining a commercial is, most people traditionally categorize advertisements (which sell) as being distinct from editorial or programming (which informs and/or entertains) This dividing line is blurred on the Internet where content and commerce are becoming intertwined.

"Content is no longer king The customer is king You cannot spend hundreds of thousands, even millions of dollars, in developing new media content without having an understanding of who your customer is," says John Keyes, chief creative officer of the lifestyle Web site Avenue Zero (http://avenuezero.com)

"And it's gone beyond simple demographic information like age sex and income Now, companies like ours and lots of other companies are looking at psychographic and behavioural information. We are looking at people's behavioural patterns on a site so that we can design a site that suits their behavioural patterns This allows for content that's customized and personalized, so that you can create your own experience when you go onto a site"

Keyes adds, "The way we look at Avenue Zero, we say that it's divided up three ways, entertainment information, and commerce. We know the entertainment will attract viewers. The information will attract users The e commerce has been developed for both types of visitors to our site. The content is a part of all three"

"The big players are paying attention to content now because it keeps people coming back," says Beverly Wood a freelance content provider "That's important for e commerce. It builds trust when they [the customers] see

VOICES OF CONTENT Independent video producer Mike Cantelon (top) Avenue Zero chief creative officer John Keyes (above) and freelance content provider Beverly Wood (right) are some of Vancouver's new media content buyers and creators.

the Web site is not a fly-by-night operation According to research it takes six impressions on average before a customer will buy from a site."

Content strategist Paula Skaper, of Skaper Communications also sees much of the demand for content on the Web being commerce driven

"Customers expect information they want to go to a site and get information on products, so that requires product descriptions, and reviews, and other types of content that they can trust. Increasingly, these users are sophisticated Internet users. They won't trust a site where everything is a sales pitch"

"Factoring an entertainment side into your site is going to become very important," says new media writer and educator Anne Pepper "It keeps people at a site and it builds the site's personality"

Who's creating content?

One of the effects of the Internet has been the democratization of access to the eyes and minds of the public While the Internet has a long way to go in matching the audience size of television, it has already far outstripped broadcast in its ability to present points of view from outside the mainstream.

Peter Hansen of Plasmecanica is a media design and production consultant He was most recently involved in a three year trial program by Telus exploring the delivery of broadband content. The experience gave him an excellent vantage point from which to view the future of new media and content.

"The growth of Internet use and culture is shaking the reins of those who traditionally controlled the delivery of content. The holders of the content still control when it comes to market but scheduling is becoming obsolete—except for things like live events, sports, and time-sensitive information like news. New media also opens up a market for niche products To whatever extent opportunities are lost I would argue that more opportunities are gained"

> "New media is an exciting way to tell stories, because you are no longer limited to just one medium. A project can have video, animation, sound files, text..."
>
> *—Andrew Yates*

Many groups and causes that have found it difficult to get their message into the mainstream media are welcoming the opportunities presented by the Internet's demand for content. In fact, even mainstream media outlets are taking risks with content that would be impossible via traditional broadcast dissemination.

Robert Ouimet, special projects manager for CBC Radio 3 is one of the forces driving the new CBC Web site 120seconds.com. He believes the Internet has come of age and is an excellent tool for Canada's national broadcaster to reach a new audience

"If anyone had suggested two years ago that the Internet could be a distinct medium, more than just a promo page for TV or radio, they would have told you to go away. But now, for a traditional broadcaster it's important to be in this field. There's a whole segment of the population that's making the Internet their first stop when they are seeking information and entertainment. Typically, that's a younger audience that's unfamiliar with CBC Radio."

Mike Cantelon is an independent video producer and member of the Mediacore a/v collective (http://www.mediacore.org) His production for 120seconds.com covers the November 1999 World Trade Organization (WTO) protests in Seattle, Wash. with streaming video, original music, and visuals from a decidely non corporate viewpoint.

"I think there's going to be much more diversity I believe it's going to end up like the situation with MP3 There is going to be an outlet for a wide range of high quality amateur productions that don't need a lot of money or corporate backing to get made In fact I won't be suprised to see a reverse situation occuring where stuff that gets made for the Internet ends up being shown on local access and public television channels because of public demand."

Andrew Yates and Pat Gemmell are also seizing the new media reins to tell their own stories. The pair's independent documentary on the International Bicycle Fund's work in Cuba is another 120seconds.com project.

"The Internet and new media is creating a great new avenue for all kinds of artists" says Yates. "Artists in music and film and television have typically been dependent on big companies to get their work out Now technological advances have lowered the barriers to entry to the point where anyone with a little money and some technical savvy can make it happen for themselves Also, new media is an exciting way to tell stories, because you are no longer limited to just one medium. A project can have video, animation, sound files, text..."

Hansen agrees, "If I was to create a documentary about fish, I would create a linear video, but I would also include additional information through HTML In essence the research you do to produce the video becomes part of the product as well. We're already seeing this with Web sites for television channels like the Discovery Channel."

While activists and independents are taking advantage of the Internet's capabilities and seizing the means of [content] produc

Continued on page 33

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Logitech Cordless Touch Keyboard	$74 00
Logitech Cordless iTouch/Desktop Pro Keyboard	$129/150
Microsoft Natural Elite/Internet Keyboard	$38 26
17/19" ATX Mid Size Tower w/ CSA Rated Supply	$40 47
20" ATX Tower with 250W CSA Power Supply	$65 00
[illegible] Mid Size Tower with CSA Power Supply	[illegible]

Drives & Tape Backup

1.2MB 5.25"/1.44MB 3.5" Floppy Drive	$56 18
Panasonic LS-120 120MB Floppy Drive [illegible]	[illegible]

[illegible] HDD	$215/300/435
[illegible] 7200RPM HDD	[illegible]

Motherboards

Intel L440GX Pentium II / III Server Board	$765 00
Abit BF6/BE6 440BX Pentium II/III Board	$162/207
Abit BE6 II/BE Socket 370 Board ATA100	$245 00
Abit VT6 VIA Apollo Pro 133 Pentium III Board	$150 00
Abit KA7-100 KX133 ATA-100 Athlon Board	$260 00
ASUS P5 A-B 100MHz AGP Socket 7 512KB L2	$122 00
ASUS P3BF/CUBX 440BX Pentium II/III Board	$160/190
ASUS P2B/D 440BX Dual CPU/Ultra2SCSI Board	$676 00
[illegible]	[illegible]
ASUS P3V4X/CUV4X VIA Apollo Pro 133 Board	$160/173
ASUS K7M/K7V Slot A Athlon Board	$202/238
ASUS A7V VIA KT133 Socket A Athlon/Duron Board	$204 00
Microstar MS-6309 VIA 133 Pentium III Board	$143 00
Microstar MS-6340 Pro Dual Socket 370 Board	$285 00
[illegible]	$245 00

MultiMedia

Aureal Vortex 2 SuperQuad A3D 2.0 Sound Card	$88 00
Creative Labs Sound Blaster Ensoniq PCI/PCI 128	$28/40
Creative Labs Sound Blaster Live! MP3+/X-Gamer	$133 00
Creative Labs Sound Blaster Live! Platinum/Live Value	[illegible]
Aimsy 50X/Creative Labs 52X IDE CD-ROM Drive	$14/50
Hewlett Packard 8250i 4x4x24 IDE CDRW	$270 00
Hewlett Packard 9210i/e Int/Ext SCSI CDRW	$355/500
Panasonic/Plextor 8x4x32 Int IDE CDRW	$240/340
Plextor 12x4x32 Int/Ext SCSI CDRW	$620/650
Panasonic 8x/Pioneer 16x IDE DVD Drive	$162/190
Toshiba 40X SCSI CD ROM Drive	$175 00
[illegible] CDRW	[illegible]

Modem & Mice

AOpen 56K v.90 ISA/PCI Fax Modem	[illegible]
Genius NetMouse with Magic-Button	$12 00
Logitech FirstMouse+ OEM/Cordless Wheel	$14 53
Logitech Trackman Marble Wheel/Marble FX	[illegible]
Logitech TrackMan Live Cordless	$177 00
Microsoft Basic Mouse/Cordless Wheel Mouse	$17/56
Microsoft Trainer Mouse/IntelliMouse	$14/20
Microsoft IntelliMouse Web PS/2	$26 00
Microsoft IntelliMouse Optical Tech/Explorer	$68/85
Microsoft Compatible Mouse PS/2	[illegible]
[illegible]	[illegible]
US Robotics 56K v.90 USB Pro Ext Modem	$205 00
Zoltrix 56K v.90 External Fax Modem	[illegible]

Printers

Canon BJC-1000/250/265 Inkjet	[illegible]
Canon BJC-2100/3000 Inkjet ($30 rebate)	$128/224
Canon BJC-5100/6100 Color Inkjet	$176/289
Brother 1000 Laser 600dpi 10ppm	[illegible]
Epson Stylus 440/670 Inkjet	$108 132
Epson 740i Inkjet for iMac/USB [illegible]	$285 00
Epson Stylus 760 Inkjet (USB30 rebate)	$226 00
Epson Stylus 870/870DC Inkjet 1440dpi	$425 540
Epson Stylus Macrodrive Color Inkjet 1440dpi	$998 790
HP 610CL/640C Deskjet Color Printer	$181 234
HP 930C/950C Deskjet Color Printer	$305 450
HP 880Cxi/970Cse Deskjet Color Printer	$371 590
HP P1000/P1100 PhotoSmart Color Printer	$861 725
HP 1220C/N/2000C Deskjet Color Printer	$701 700
HP 2000C/2500CM Professional Printer	$1385/1056
[illegible]	[illegible]
[illegible]	[illegible]

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Intel Processor Dealer

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Vancouver, B.C. V6H 1G7

Pentium III~Game Blaster

Intel Pentium III Processor/133MHz Bus
Asus CUV4X VIA Apollo Pro 133A ATX Board
128MB 168 Pin SDRAM (PC133MHz)
1.44MB Floppy Drive
15GB Ultra DMA-66 7200RPM IDE Hard Drive
Ultra DMA66 Cont. w/2x16550 Serial,1xBi-Directional Parallel
AGP 3dfx Voodoo 3000 Graphics Card with 16MB
Creative Labs Live! Value Card-Environmental Audio
50x Speed UDMA CD-ROM
MLI-480 Sub-woofer Speaker
Samsung 750S 17" .27mm DP NI SVGA Monitor
ATX Mid-Tower Case with CSA Power Supply
107 keys Windows 98 Keyboard,PS/2 Mouse
2 Year Parts & Service Warranty

PIII 533MHz 256KB L2 .. $1,5[illegible]
PIII 667MHz 256KB L2 .. $1,600
PIII 733MHz 256KB L2 .. $1,660
PIII 800MHz 256KB L2 ... $1,895
PIII 866MHz 256KB L2 .. $2,24[illegible]

Ultimate Power Station

Intel Pentium III Processor/133MHz Bus
Asus CUV4X VIA Apollo Pro 133A ATX Board
128MB 168 Pin SDRAM (PC133MHz) PC133
1.44MB Floppy Drive
20GB Ultra DMA-66 7200RPM IDE Hard Drive
Ultra DMA66 Cont. w/2x16550 Serial,1xBi-Directional Parallel
AGP nVidia TNT2 Ultra Card 32MB TV Out
Aureal Vortex 2 SuperQuad A3D 2.0 Sound Card
50x Speed UDMA CD-ROM
Altec Lansing 48.2 Sub-woofer Speaker
Samsung 753DF 17" .27mm DP DynaFlat Monitor
ATX Mid Tower Case with CSA Power Supply
107-keys Windows 98 Keyboard,PS/2 Mouse
2 Year Parts & Service Warranty

PIII 667MHz 256KB L2...$1,756
PIII 733MHz 256KB L2...$1,855
PIII 800MHz 256KB L2...$2,090
PIII 866MHz 256KB L2...$2,440
PIII 933MHz 256KB L2...$2,785

[illegible]

LIFETIME WARRANTY

16MB 60ns 72-Pin EDO SIMM	$63.00
32MB 60ns 72-Pin EDO SIMM	$117.00
32MB SDRAM PC 100 compliant	$60.00
64MB SDRAM PC 100 compliant	$112.00
128MB SDRAM PC 100 compliant	$225.00
256MB SDRAM PC 100 compliant	$450.00
128MB SDRAM PC 133 compliant	$229.00
256MB SDRAM PC 133 compliant	$473.00
128MB ECC SDRAM PC 100 compliant	$247.00
256MB ECC SDRAM PC 100 compliant	$527.00
128MB ECC SDRAM PC 133 compliant	$259.00
256MB ECC SDRAM PC 133 compliant	$519.00

BASF CDR $1.20
SONY CDR $1.55
BASF 80min CDR $1.45
[illegible] CDRW [illegible]

Iomega Zip

100MB Zip Disk
$12.00

56K Modem

V.90 Internal Fax Voice Modem
$22.00

MICROCONCEPT NETWORK PRODUCTS FOR LESS !!

Novell NetWare

NetWare v3.2

NetWare v3.2 5/10 User
NetWare v3.2 25/50 User
NetWare v3.2 Enhancement Pack

IntraNetWare v5.1

NetWare 5.1 Server Plus 5 User Lic
[illegible]

Netware Small Business Suite v5

Netware Small Business v5 Server w/5 user
[illegible]

Microsoft Server

Windows NT Server v4.0 CD w/5 Clients Lic $1080
Windows NT Server v4.0 CD w/10 Clients Lic $1640
Windows NT v4.0 Client Access Lic
Windows NT Workstation 4.0 CD $430
Windows 2000 Server w/5 Clients Lic
Windows 2000 Server w/10 Clients Lic
Windows 2000 Professional $430
BackOffice Small Business Server v4.5 w/5 Clients
BackOffice Server v4.5 w/5 Clients
Microsoft SMS Version 2.0 w/10 Clients Lic
Microsoft SMS Version 2.0 w/25 Clients Lic
[illegible]

Network Printers

LEXMARK

Optra M410
1200dpi Image Quality
$1025.00

HP 4050 Laserjet,1200dpi,17ppm
HP 4050N Laserjet,1200dpi,17ppm,16MB,Network
HP 4050TN Laserjet,1200dpi,17ppm,16MB,Network
HP 5000 Laserjet,1200dpi,16ppm,11x17"
[illegible]

Tape / CD ROM Drive

[illegible]

Power Protection

$126.00

American Power

BackUPS [illegible]
[illegible]

Cables & Jacks

Twisted Pair

[illegible]
Connector RJ45M
Tool RJ45 Crimping
Multi-Network Cable Tester

Coaxial

Assembly RG58A/U Thin Coax 25/50/100 ft
Cable RG58A/U Bulk per ft
Cable RG58A/U Bulk per 1000 ft
Connector BNC "T" Terminator 50 ohm
Tool BNC Crimping

10BaseT/2 Adapters

[illegible]

Print Servers/USB Hub

[illegible]

PCMCIA Adapters

[illegible]

10 BaseT Hubs

[illegible]

10 BaseT Adapters

[illegible]

Switches

[illegible]

10/100 Mbps Systems

3COM 3C905C-TX-M
Fast Ethernet Adapter
$68.00

[illegible]

Systems Inc.

http://[illegible]concept.com

Tel: (604) 730-8183
Fax: (604) 730-7963
Tech: (604) 738-8738

Store Hours:
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Sat 10:00am - 5:00pm
Sun Closed

- Two Year Parts And Service Warranty (Systems Only)
- All Systems Are Tested And Burned-In For 48 Hours Before Shipping
- Government And Corporate Purchase Orders Welcome
- Fax Orders And Bids Are Accepted
- All Prices Reflect 2% Cash Discount
- Leasing Available
- Prices Subject To Change Without Prior Notice

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brother

MFC-9600 6in1 [illegible]
- True 600 x 600 dpi output
- 8MB RAM • 12 PPM
- PC Fax • Colour Scanner

MP-21C (Colour) [illegible]
- True 720 x 720 dpi output
- 2 pounds only
- 2 pages per Minutes
- PCMCIA interface
- No AC adapter required

HL 1240DX Series [illegible]
- True 600 x 600 dpi output
- 2MB RAM

HL-1250DX Series [illegible]
- 1200 x 600 dpi
- 4MB RAM

HL 1270N Series [illegible]
- 1200 x 600 dpi
- 10/100BT

OKIDATA Limited Quantity $220

Okipage 6w

Model	PPM	Res	Price
Okipage 6w	6	600dpi	$ 305
Okipage 8w	8	600x600	$ 385
Okipage 10e	10	600dpi	$ 475
Okipage 12i	12	600x600	$ 955
Okipage 18	18	600dpi	$1350
Okipage 24dx	24	600dpi	$1965

Microline DOT-MATRIX OKIDATA Printer

Model N/W	CPS	Pin	Price
ML184	300	9	$350
ML320/321	435	9	$510/715
ML520/521	435	9	$625/830
ML390/391	390	24	$540/730
ML395/Color	507	24	$1650/1750
ML590/591	360	24	$725/965

free installation

VIA Apollo Pro Celeron AT Board with AC-97 On Board Sound (100MHz Bus)

Intel Celeron 466MHz w/128KB L2 . $265
Intel Celeron 500MHz w/128KB L2 . $275
Intel Celeron 533MHz w/128KB L2 . $285
Intel Celeron 566MHz w/128KB L2 . $295

VIA VP3 Super Socket 7 AT AGP Board with 512KB L2 Cache & AC-97 On Board Sound

AMD K6-2 3D 500 MHz $210
AMD K6-2 3D 533 MHz $220
AMD K6-2 3D 550 MHz $235

DV $ [illegible]

Asus 1394 FireWire Adapter
- 2 IEEE 1394 Ports
- 100,200 & 400 Mb/s Transfer Rate
- Supports DV Camcorders

100MB $76
250MB $139

Zip Cartridge not included
Internal IDE Zip Drive
11.2Mb/sec data transfer rate, 20 times faster than floppy.

Hercules

3D Prophet 2 GTS $5[illegible]
- 64MB DDR TVout
- DVI - Out
- nVIDIA GeForce 2 GTS

$115

AGFA

Agfa SnapScan 1212u
- 36 Bits/Pixel Color
- Optical Resolution 600x1200dpi
- USB Interface

routers $25[illegible]

Built-In Firewall

Linksys BEFSR41
Instant Broadband Etherfast Cable/DSL Router

Microsoft $62

MS Intellimouse Explorer
- New Optical Technology
- No ball to Clean
- Scroll wheel & 5 programmable button

3dfx

5500 AGP $435
3500 AGP $25[illegible]
3000 AGP $145 OEM

Disc Storage

Seagate · Cheetah · Barracuda · Quantum · FUJITSU

Capacity	Model	Access	Cache	RPM	Interface	Price
9.2GB	ST39236LW	5.9ms	2MB	7200	ULTRA 2 SCSI	$ 340
9.2GB	ST39204LW	5.2ms	4MB	10000	ULTRA 160	$ 405
18GB	ST318436LW	5.9ms	2MB	7200	ULTRA 2 SCSI	$ 610
18.4GB	ST318404LW	5.2ms	4MB	10000	ULTRA 160	$ 615
18.4GB	ST318451LW	3.9ms	4MB	15000	ULTRA 160	$ 870
36.7GB	ST336704LW	5.2ms	4MB	10000	ULTRA 160	$ 980
73.4GB	ST173404LW	5.2ms	4MB	10000	ULTRA 160	$1840
9.1GB	DNES-309170	7ms	2MB	7200	ULTRA 2 SCSI	$ 358
9.1GB	07N3220	4.9ms	4MB	10000	ULTRA 160	$ 425
18.3GB	DNES-318350	7ms	2MB	7200	ULTRA 2 SCSI	$ 545
18.2GB	09L3805	5.4ms	2MB	10000	ULTRA 2 SCSI	$ 745
18.3GB	07N3210	4.9ms	4MB	10000	ULTRA 160	$ 536
36.9GB	07N3100	6.8ms	4MB	7200	ULTRA 160	$ 900
36.7GB	07N3200	4.9ms	4MB	10000	ULTRA 160	$1000
9.1GB	QM309100XY	6.3ms	4MB	7200	ULTRA 160	$ 335
9.2GB	QM309200TY	5ms	8MB	10000	ULTRA 160	$ 539
18.4GB	QM318300XC	6.3ms	4MB	7200	ULTRA 160	$ 535
18.4GB	QM318400TY	5ms	8MB	10000	ULTRA 160	$ 806
36.7GB	QM336700XC	6.3ms	4MB	7200	ULTRA 160	$1066
36.7GB	QM336400TN	5.5ms	8MB	10000	ULTRA 160	$1410
73.4GB	QM373400TY	5ms	8MB	10000	ULTRA 160	$2585
9.1GB	MAH3091MP	6.8ms	4MB	7200	ULTRA 160	$ 325
9.1GB	MAJ3091MP	4.7ms	4MB	10000	ULTRA 160	$ 480
18.2GB	MAH3182MP	6.8ms	4MB	7200	ULTRA 160	$ 600
18.2GB	MAJ3182MP	4.7ms	4MB	10000	ULTRA 160	$ 720
36.4GB	MAJ3364MP	4.7ms	4MB	10000	ULTRA 160	$1320

DIAMOND

Rio 500 $175 Rio 500

$35 Upg. Kit - silver plate, case & remote

RIO PLAYERS

NVIDIA $218 OEM

Monster Sound MX400 $75/110 OEM Pack / Retail Pack

Cannon3D

CREATIVE

gFORCE 2 GTS Annihilator 2 $415

CD-RW Blaster® 8432

Blaster CDRW 8432 Drive $305

Sound Blaster Live Value $69

APOLLO

P 1250i $118
P 2250i $145

Mail-In Rebate (until 31st July 2000)

$45.00	$75.00
Purchase an Apollo P-1250i or P2250 Printer Printer Only •	Purchase an Apollo P-1250i or P2250 Printer w/any PC And Monitor On the Same Receipt

SAMSUNG ELECTRONICS

SyncMaster 750s $265
- 17" (16" Viewable)
- 0.27mm Dot Pitch
- 1280x1024 @60Hz

570S TFT LCD Display $1515
- Full 15" Viewable Screen
- Zoom In Up To 5 Times
- Backlight Dimming Control

SyncMaster 150MP $1925
- 1024x768 @85Hz
- Built-in TV Tuner
- Rotatable PIP / Remote Control

SyncMaster 753DF $365
- 17" (16" V) DynaFlat Tube
- 0.20mm (H) Pitch
- 1280x1024 @65Hz

SyncMaster 700NF $435
- 17" (16" V) Natural Flat Tube
- 0.25mm AG Pitch
- 1600x1200@76Hz

SyncMaster 900NF $660
- 19" (18" V) Natural Flat Tube
- 0.25mm AG Pitch
- 1600x1200@76Hz

SyncMaster 170MP $3625
- 1280x1024 @75Hz
- Built-in TV Tuner
- Rotatable PIP / Remote Control

Mail in Rebate Offer. 753DF-$30.00 700NF-$50.00 900NF-$50.00

HEWLETT PACKARD LOW $395

SureStore 9310i CD-Writer
- Create CDs for CD-ROM & Audio Players
- Write & Rewrite CDs using CD-RW Discs
- Speeds: 10x (write) 4x (rewrite) 32x (read)

zip

Get 100MB / 250MB Storage $12.00/$22

Parallel Port $ 139
USB Port $ 150

ZIP 250MB Drive

Parallel/SCSI $ 205
USB Port $ 230

jaz Jaz 2GB SCSI External Drive only $ 475

Get 2GB Storage for only $128

Get 1GB Storage for only $120

ALTEC LANSING

ACS90W PowerCube Speaker (2 pcs) w/Headphone Jack	$39.00
ACS[illegible] PowerCube Speaker (2 pcs)	$52.00
ACS[illegible] PowerCube 3 pcs Speaker w/Wood Subwoofer	$[illegible]
ACS[illegible] PowerCube Plus Speaker (2 pcs)	$150.00
ACS[illegible] PowerPlay Plus 5 pcs Speaker System	$[illegible]
ACS[illegible] Digital High Power 5 pcs Gaming Speaker System	$175.00
ACS[illegible] Altec 3 pcs Speaker System (6 color options)	$116.00
[illegible] 3 pcs Speaker System with Thin Profile Design	$116.00
ADA[illegible] Digital PowerCube Speaker (3 pcs with USB)	$182.[illegible]
ADA104 [illegible] 2 pcs Surround with Subwoofer	$138.00
ADA305 Digital PowerCube Speaker w/MultiChannel Surround	$19[illegible]
ADA880R Dolby Digital Speaker w/detachable Rear Surround	$[illegible]

YAMAHA

YST-M[illegible] [illegible] Multimedia Speaker (2 pcs)	$4[illegible].00
YST-MS[illegible] Multimedia Speaker & Subwoofer (3 pcs)	$[illegible].00
[illegible] 2-Way Multimedia Speaker	$66.00

CAMBRIDGE SOUNDWORKS

PC Works Desktop Speaker	$58.00
PC Works Four Point Surround Speaker FPS1000	$[illegible].00
PC Works Four Point Surround FPS2000 Digital Speaker	$188.00
SoundWorks Amplified Speaker & Subwoofer	$135.00
SoundWorks Digital Speaker & Subwoofer (Black)	$138.00
Desktop Theater 5.1 Dolby, 5 Speaker System DTT2500	$380.00

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VAIO

F-590 $6199.99
Intel Pentium III 750MHz
128MB Memory
18.1GB Hard Drive
8X Max. DVD ROM
56KBps Fax Modem
15" XGA TFT Display
iLink S400 Interface
Video Out - NTSC

F-580 $4899.99
Intel Pentium III 650MHz
64MB Memory
12GB Hard Drive
8X Max. DVD ROM
56KBps Fax Modem
15" XGA TFT Display
iLink S400 Interface
Video Out - NTSC

F-560 $4299.99
Intel Pentium III 600MHz
64MB Memory
6GB Hard Drive
8X Max. DVD ROM
56KBps Fax Modem
14.1" XGA TFT Display
iLink S400 Interface
Video Out - NTSC

F-540 $3699.99
Intel Pentium III 500MHz
64MB Memory
8GB Hard Drive
8X Max. DVD ROM
56KBps Fax Modem
14.1" XGA TFT Display
iLink S400 Interface
Video Out - NTSC

F-520 $2799.99
Intel Pentium III 500MHz
64MB Memory
8GB Hard Drive
24X CD ROM
56KBps Fax Modem
13" HPA Display
iLink S400 Interface
Video Out - NTSC

Z505JS $4899.99
Intel Pentium III 550MHz
128MB Memory
12GB Hard Drive
56KBps Fax Modem
12" XGA TFT Display
iLink S400 Interface
Memory Stick Slot, Fast Ethernet Port Replicator

XG-29 $5899.99
Intel Pentium III 750MHz
128MB Memory
18.1GB Hard Drive
8X Max. DVD-ROM
56KBps Fax Modem
14" XGA TFT Display
Sony Jog Dial Control
iLink S400 Interface

XG-28 $4999.99
Intel Pentium III 650MHz
128MB Memory
12GB Hard Drive
8X Max. DVD ROM
56KBps Fax Modem
13.3" XGA TFT Display
Sony Jog Dial Control
iLink S400 Interface

C1XS $3599.99
Intel Pentium II 400MHz
64MB Memory
12GB Hard Drive
56KBps Fax Modem
8.9" XGA TFT Display
iLink S400 Interface

SONY

505 Accessories

PCGA-CD51A Ext. 16x CD ROM Drive ... $[illegible]
PCGA-CCZ5 Leather Carrying Case ... $231
PCGA-BP[illegible] Double Cap. Battery ... $[illegible]
PCGA-BP51 Standard Battery ... $[illegible]
PCGA-SP51 Stereo Speaker ... $164
PCGA-AC51 AC Adapter ... $164
PCGA-BP[illegible] Triple Cap. Bat. ... $[illegible]
PCGA-BPZ51 Standard Battery ... $[illegible]
PCGA-BP54 Quad Cap. Battery ... $[illegible]
PCGA-DA5 Monitor Adapter for Z505 ... $[illegible]

F-Series Accessories

PCGA-AC71 AC Adapter ... $164
PCGA-BP71 Standard Battery ... $[illegible]
PCGA-PRF1A Port Replicator ... $327

XG Accessories

PCGA-CDRW1 CD-RW Drive ... $879
PCGA-FLX1 Privacy Screen ... $479
PCGA-PSX1 XG Dock ... $[illegible]
PCGA-HDX10 10GB Hard Drive ... $1279

VAIO Accessories

PCGA-UMR1A USB Mini[illegible] ... $[illegible]
PCGA-UFD5 Ext. USB Floppy ... $123
PCGA-PRS Port Replicator ... $164
PCGA-CDRW51 PC Card CD-RW Drive ... $[illegible]

Memory Stick

MSA-4A 4MB Memory Stick ... $44
MSA-8A 8MB Memory Stick ... $[illegible]
MSA-16A 16MB Memory Stick ... $[illegible]
MSA-32A 32MB Memory Stick ... $179
MSA-64A 64MB Memory Stick ... $[illegible]
MSAC-PC2 PC Card Adapter ... $110

Memory Stick
The Universal Exchange Media

IBM ThinkPad

Model	CPU	RAM	HDD	CD	Display	EtherJet	Price
i1210	Cel500	32MB	6GB	24X	12.1 HPA	56K	$1,780
i1230	Cel500	64MB	6GB	24X	13.3 HPA	56K	$2,030
i1250	Cel500	64MB	6GB	24X	12.1 TFT	56K	$2,418
i1422	Cel500	32MB	6GB	24X	13 HPA	56K	$1,800
i1482	Cel500	64MB	12GB	DVD	14.1 TFT	56K	$3,110
i1492	P3-500	64MB	12GB	DVD	15.0 TFT	56K	$3,635
i1542	Cel500	64MB	12GB	24X	12.1 TFT	56K	$2,670
240	Cel366	64MB	6.4GB		10.4 TFT	56K	$2,550
240	Cel400	64MB	12GB		10.4 TFT	56K	$2,686
600X	P3-450	64MB	6.0GB	24X	13.3 TFT	56K	$3,875
600X	P3-500	64MB	12GB	24X	13.3 TFT	56K	$4,870
600X	P3-500	64MB	12GB	DVD	13.3 TFT	56K	$4,970
600X	P3-650	64MB	12GB	DVD	13.3 TFT	56K	$6,370
A20m	Cel500	64MB	6.0GB	24X	12.1 TFT	56K	$2,735
A20m	Cel500	64MB	6.0GB	24X	12.1 TFT	Combo	$2,835
A20m	P3-500	64MB	6.0GB	24X	12.1 TFT	56K	$3,080
A20m	P3-500	64MB	6.0GB	24X	12.1 TFT	Combo	$3,180
A20m	Cel500	64MB	12GB	24X	15 TFT	56K	$3,480
A20m	Cel500	64MB	12GB	24X	15 TFT	Combo	$3,580
A20m	P3-700	64MB	12GB	24X	14.1 TFT	56K	$4,125
A20m	P3-700	64MB	12GB	24X	14.1 TFT	Combo	$4,225
A20p	P3-700	128MB	18GB	DVD	15 TFT	56K	$5,865
A20p	P3-700	128MB	18GB	DVD	15 TFT	Combo	$5,965
T20	P3-650	128MB	6.0GB	24X	13.3 TFT	56K	$4,425
T20	P3-650	128MB	6.0GB	24X	13.3 TFT	Combo	$4,525
T20	P3-700	128MB	12GB	DVD	14.1 TFT	56K	$5,470
T20	P3-700	128MB	12GB	DVD	14.1 TFT	Combo	$5,870

ACER

TravelMate 600TER
Intel Pentium III 600MHz
64MB Memory
12GB Hard Drive
4x4x20 CDRW/built-in sound
13.3" TFT Display
56KBps Modem/Ethernet

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343TV	P3-500	128MB	12GB	DVD	12.1 TFT	$3,520
508T	Cel500	64MB	4.8GB	24X	12.1 TFT	$2,045
514TXV	Cel466	64MB	6GB	DVD	14.1 TFT	$2,625
521TE	P3-600	64MB	6GB	24X	13.3 TFT	$2,825
521TXV	P3-600	64MB	6GB	DVD	14.1 TFT	$3,140
602TER	P3-650	128MB	12GB	CDR	13.3 TFT	$3,555
732TXV	P3-500	64MB	9GB	DVD	14.1 TFT	$3,280
732TLV	P3-500	128MB	12GB	DVD	15 TFT	$3,625
734TXV	P3-600	64MB	9GB	DVD	14.1 TFT	$3,420
734TL	P3-600	64MB	12GB	24X	15 TFT	$3,835
735TLV	P3-650	128MB	12GB	DVD	15 TFT	$3,950
737TLV	P3-700	128MB	18GB	DVD	15 TFT	$4,225

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56KBps V.90 Fax Modem
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Model	CPU	RAM	HDD	CD	Display	Price
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2230CDS	Cel500	32MB	6.0GB	24X	12.1DSTN	$2,020
2250CDT	Cel500	64MB	6.0GB	24X	12.1 TFT	$2,420
2750DVD	P3-500	64MB	6.0GB	DVD	12.1 TFT	$3,030
3110CT	P2-300	64MB	6.4GB		10.4 TFT	$2,350
3440CT	P3-500	64MB	6.0GB		11.3 TFT	$3,400
4270XDVD	Cel500	64MB	6.0GB	DVD	14.1 TFT	$3,040
4270ZDVD	Cel500	64MB	12GB	DVD	15.0TFT	$3,480
4280DVD	P3-450	64MB	12GB	DVD	14.1 TFT	$3,850
4340	P3-650	64MB	12GB	DVD	14.1 TFT	$4,345
8100	P3-500	64MB	12GB	DVD	14.1 TFT	$4,345
8100	P3-550	128MB	18GB	DVD	14.1 TFT	$5,040
8100	P3-750	128MB	20GB	DVD	14.1 TFT	$6,130

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Adaptec APA-1460 MiniSCSI Kit ... $178.00
Adaptec APA-1480A MiniSCSI Kit (CardBus) ... $248.00
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Eap [illegible] Traveler Plus DVD w/MPEG2 Card ... $[illegible]
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Intel Pro/100 LAN+56K Modem CardBus II RP ... $415.00
Intel Pro/100 LAN+56K Modem CardBus II ... $320.00
Kingston [illegible] PCMCIA Ethernet Combo ... $112.00
Linksys PCMLM56 10/100 LAN+56K Modem ... $228.00
Megahertz 3CXFE575CT 10/100 LAN Xjack ... $[illegible]
Megahertz 3CCFE575CT 10/100 LAN CardBus ... $[illegible]
Megahertz 3CX[illegible] 10BaseT ... $196.00
Megahertz 3CX[illegible] 10BaseT/2 ... $268.00
Megahertz 3C[illegible]-CA 56K Global GSM Modem ... $273.00
Megahertz 3CXM[illegible] 56K Win Modem (XJack) ... $210.00
Megahertz 3CXFE[illegible] 100 LAN+56K Modem ... $515.00
Megahertz 3CXEM[illegible] 10BaseT+56K Modem ... $295.00
Megahertz 3CXEM[illegible] 10BaseT/2+56K Modem ... $[illegible]
Micro Innovations 17-Keys Numeric Keypad ... $[illegible]
Micro Solutions 24X Backpack Ultra Light CD-ROM ... $238.00
Micro Solutions 24X Backpack CD w/Sound ... $[illegible]
Micro Solutions 32X Backpack CD-ROM ... $248.00
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ThinkPad TP 390x, 600x ... $[illegible]/170/370
ThinkPad 770 770E,600E TP390,i-1400,1540,2400 ... $[illegible]/140/334
ThinkPad 380 ... $138/NA/NA

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Armada 1500C 1700,7400,7800 ... $[illegible]/150/270
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iPAQ 3650 Pocket PC $[illegible]
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COMPAQ Presario 1200-XL115

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V300	Cel466	64MB	6GB	24X	12.1 TFT	$2,625
V300	Cel500	64MB	6GB	24X	14.1 TFT	$3,200
M300	P3-500	64MB	6GB		11.3 TFT	$3,650
M300	P3-550	64MB	12GB		11.3 TFT	$4,210
M700	P3-500	64MB	12GB	DVD	14.1 TFT	$5,020
M700	P3-600	64MB	6GB	24X	14.1 TFT	$5,300
M700	P3-700	64MB	12GB	DVD	14.1 TFT	$5,550
M700	P3-750	64MB	12GB	DVD	14.1 TFT	$5,975
E500	P3-500	64MB	6GB	24X	13.3 TFT	$3,565
E500	P3-600	64MB	12GB	24X	14.1 TFT	$4,030
E500	P3-650	64MB	12GB	DVD	14.1 TFT	$4,555
E500	P3-700	64MB	12GB	DVD	15 TFT	$5,225
E700	PII400	128MB	14GB	DVD	14.1 TFT	$4,080
E700	P3-600	128MB	18GB	DVD	15 TFT	$5,265

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- On Board GD5480 Video Card 2MB
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- 50x Speed UDMA CD ROM
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- ATX Mid-Tower Case w/Power Supply
- Fujitsu 107-keys Keyboard /w MS Mouse

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PIII-667MHz...$1,915
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PIII-866MHz...$2,560

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	Oxygen GVX1	GLINT R3 & GLINT Gamma G1 chipset 32MB AGP	$1095.00
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	Permedia Create!	Permedia 3 processor with 32MB SDRAM AGP	$188.00
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	SScan 814	SuperScan 814 21"/20"V 0.22mmDP 2048x1536@86Hz	$2426.00
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	DScan 90e	90e 19"/18"V 0.25mmDP 1600x1280@75Hz	$705.00
	DPro 710S	DP710S 17"/16"V 0.25mmDP 1600x1200@85Hz Flat	$580.00
	DPro 900u	900u 19"/18"V 0.25mmDP 1600x1280@75Hz USB	$947.00
	DPlus 73	DP73 17"/16"V 0.25mmAG 1280x1024@85Hz	$450.00
	DPlus 91	DP91 19"/18"V 0.25mmAG 1600x1200@75Hz	$815.00
	DPlus 200u	DP200u 22"/20"V 0.24mmDP 1600x1200@85Hz	$1480.00
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	LXA580W	15" LCD Panel 1024x768@75Hz LCD52	$1880.00
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	OPTIQUEST	Q53	0.28mm	1280x1024	13.8"	30-70KHz	$ 235
	ViewSonic	M50	0.27mm	1280x1024	13.8"	30-70KHz	$ 255
	ViewSonic	G655	0.27mm	1280x1024	14.0"	30-70KHz	$ 265
17"	OPTIQUEST	Q71	0.27mm	1280x1024	16.0"	30-70KHz	$ 300
	OPTIQUEST	Q75	0.23mm	1600x1200	16.0"	30-85KHz	$ 405
	ViewSonic	E771	0.27mm	1280x1024	16.0"	30-70KHz	$ 330
	ViewSonic	E773	0.25mm	1280x1024	16.0"	30-70KHz	$ 380
	ViewSonic	G773	0.26mm	1280x1024	16.0"	30-70KHz	$ 400
	ViewSonic	GS771	0.27mm	1280x1024	16.0"	30-70KHz	$ 450
	ViewSonic	PS775	0.25mm	1600x1200	16.0"	30-86KHz	$ 485
	ViewSonic	M70	0.27mm	1280x1024	16.0"	30-70KHz	$ 375
	ViewSonic	EF70	0.25mm	1280x1024	16.0"	30-70KHz	$ 408
	ViewSonic	PF775	0.25mm	1600x1200	16.0"	30-97KHz	$ 485
	ViewSonic	PF77	0.25mm	1600x1200	15.0"	30-97KHz	$ 390
19"	OPTIQUEST	Q95	0.23mm	1600x1200	18.0"	30-96KHz	$ 495
	ViewSonic	E790	0.26mm	1600x1280	18.0"	30-95KHz	$ 525
	ViewSonic	E790B	0.26mm	1600x1280	18.0"	30-85KHz	$ 580
	ViewSonic	GS790	0.26mm	1600x1280	18.0"	30-95KHz	$ 620
	ViewSonic	PS790	0.25mm	1600x1280	18.0"	30-95KHz	$ 750
	ViewSonic	PF790	0.25mm	1600x1200	18.0"	30-97KHz	$ 700
	ViewSonic	PF795	0.25mm	1920x1440	18.0"	30-110KHz	$ 830
21"	OPTIQUEST	Q115	0.26mm	1600x1280	18.0"	30-95KHz	$1,025
	ViewSonic	G810	0.25mm	1600x1200	20.0"	30-85KHz	$1,170
	ViewSonic	P810	0.25mm	1600x1200	20.0"	30-95KHz	$1,200
	ViewSonic	PF815	0.25mm	1920x1440	20.0"	30-117KHz	$1,335
	ViewSonic	P817	0.25mm	2048x1536	20.0"	30-137KHz	$2,180
LCD Panel	ViewSonic	VE150	0.30mm	1024x768	15.0"	30-62KHz	$1,340
	ViewSonic	VG150	0.30mm	1024x768	15.0"	30-62KHz	$1,580
	ViewSonic	VPD150	0.30mm	1024x768	15.0"	48-62KHz	$1,590
	ViewSonic	VP150	0.30mm	1024x768	15.0"	30-62KHz	$1,510
	ViewSonic	VP151	0.30mm	1280x1024	18.0"	30-95KHz	$2,000
	ViewSonic	VP181	0.30mm	1600x1200	18.1"	30-107KHz	$4,390

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LiveMotion moves the Web

Adobe's new tool allows Web artists to create unique graphic compositions as images, animation, or to export to Flash productions

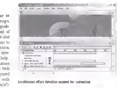
By Jacques Surveyer

LiveMotion is remarkably similar to another new Adobe product, InDesign. Both are ambitious in their goals: InDesign attempts to bring a new level of sophistication and ease of use to high-end desktop publishing; and LiveMotion tries to do the same for Web graphics and animation. Both products score some brilliant bulls eyes. LiveMotion is especially noteworthy for helping designers easily create animation sequences, rollovers and polished final Web graphics. If you use LiveMotion, be prepared for some absolutely amazing effects with images schussing (yes, with sound effects!) winking in and out and in Dungeons and Dragons fashion, revealing secret passages to bargains or prizes throughout your Web site.

LiveMotion 1.0
From Adobe Systems Inc.
345 Park Ave. San Jose, CA 95110-2704
http://www.adobe.com
System requirements: Mac G3 or Pentium II, 64 MB of RAM recommended. Mac 8.6 or higher. Windows 98, NT (SP4) or 2000
Suggested retail price: US$299
Summary: When Adobe gets the bugs out, this will be the product to have for quickly developing Web rollovers, animations and sophisticated graphic compositions. Right now you can only safely get the first two.
Out of the box: Easy to install. Good but somewhat short getting started booklet. Very good manual but no online tutorial (which would really help because there is a lot to master here)
Pros: Makes it easier to create sophisticated animations, rollovers and Web compositions
Cons: Buggy especially when using filters. Complex to master all the bells and whistles.
Overall rating: 4.2 out of 5

But at the same time both products have inflicted some real black-eyes on their users. Bugs and slow code were present in the beta versions of both programs. Unfortunately some of these have slipped into the final product, especially in LiveMotion. During 40 hours spent using it for this review LiveMotion bombed at least a dozen times. About half of those bugs are in the Filters command (which applies Photoshop effects to images in a LiveMotion composition). So a work around for Photoshop users is to do the effects in Photoshop, then place them in LiveMotion.

In addition LiveMotion has the usual problems associated with a 1.0 product. For example some of the interface elements could have used a session at the usability labs. There are 20 palettes to learn (and you can't safely ignore any them) yet there are obscure tools like Drag Selection or Pen Selection (why not let the regular Selection tool handle these tasks?) and marginal commands like Paste Active Matte (hard to figure what Active Matte is) or Top Object Is Mask (should be part of Combine options). Adobe Photoshop ImageReady and ImageStyler users, however will be pleased because the tools, palettes and commands are very familiar. Despite the above quibbles, there is a lot to like about LiveMotion.



LiveMotion offers timeline control for animation

This graphic was created and edited in five minutes using LiveMotion. Most of that time was spent deciding which images, text and vector graphics to use

The bull's-eyes

As a part-time Web developer I dread having to design navigation buttons. Not because they are hard to do, but rather because they eat up time in two ways. First getting the right bevel shading and contouring can be a tedious chore in Photoshop, PhotoPaint or your favourite graphics tool (unless you use Adobe's own ImageReady or ImageStyler, or Macromedia's Fireworks, in which case you are sitting pretty). Second, inevitably the design director wants to change either the frameset sizes and/or the navigation buttons. But with LiveMotion's Rollover and 3D palettes, making buttons over and over is like money in the bank.

LiveMotion not only provides four types of 3D effects, including cutout, bevel, ripple and emboss, but also provides six slider controls for each effect, depth, softness lighting direction, edge type and light amount. And if that is not enough every LiveMotion object can be combined five different ways and there are up to 99 interacting layers.

Because LiveMotion renders every adjustment immediately to the object on screen you quickly get a feel for what works and what doesn't. Finally when you export rollovers and buttons LiveMotion provides a wide choice of options. You can export them as Flash or HTML and you have a choice of four graphics formats (GIF JPEG PNG, or PNG2). The HTML file contains all the JavaScript code to activate the buttons. It would be nice to have Java applet output as an option but otherwise buttons and rollovers are exactly that—rollover easy to do in LiveMotion.

Easier animation

Animations have been made powerful and fun to create in LiveMotion. Heretofore I have stuck with Corel PhotoPaint and Jasc Animation Shop 2 for animating images, and used Macromedia's Flash or Shockwave for the infrequent cases where very sophisticated multimedia Web productions were required.

Most multimedia and animations are 100KB or greater—a size that takes users with 56Kbps Internet access 15 seconds or more to download. But LiveMotion and its excellent timeline editor do two things. First, they put a lot of animations and simple sound effects readily at users control. Second, many of the animations can be done on the cheap using Position and Opacity transformations rather than Skew, Scale, or Rotation. By setting the Active Export Preview option, the status bar in LiveMotion shows the creator a running total of the download cost with all the transformations applied. Here is how LiveMotion makes animations simple.

Instead of the Flash approach which starts with an empty timeline editor, LiveMotion immediately puts every object users create on a LiveMotion screen into the timeline editor. Hidden under each object's entry are all the object's attributes that can be controlled in the animation. Click on the triangle icon and all of those attributes are exposed in the timeline editor.

Users can then activate any attribute—say Position—by clicking on the timer icon next to Position. Next they can set—on the timeline—when they want the position to start to change then click on the check box to mark the keyframe for position. Finally they can move the timeline to the final point in time, move the object to its new position, then click the checkbox to indicate that this is the final position the object is moved to. Done. And LiveMotion smoothly interpolates the position of the object between start and end points.

This may sound complicated, but the user's manual describes and illustrates the steps quite clearly. And when you have done it once, you'll be able to do all the animations and object changes you want. Scene or composition-wide behaviours can be set, as well as sounds and multimedia.

However, sounds seem to be a devil to control. Unlike graphics, which stopped precisely on the position and timeline requested, sounds would drop out or continue beyond their intended stop signals.

In contrast Macromedia's Flash provided precise control over sound and other multimedia events. In sum LiveMotion is a lot easier to program and so intuitive to use it will be welcome when Adobe gets the bugs out and develops more convenient multimedia controls for the product. So for simple graphics animations and multimedia shows try LiveMotion then if it fails, go to Flash for reliable and sophisticated Web animations.

It would be nice to say that LiveMotion was able to read FLA (Flash design files) or SWF (Flash runtime files) formats but it only reads GIF animation files. However, Flash is not much better, as it can not read LiveMotion or SWF file formats—except, in the latter case, for viewing and making runtime changes.

Vector, bitmap blends

One of the attractions of LiveMotion when it was first previewed by Adobe was its great graphics composition tools. Unlike Photoshop and PhotoPaint, LiveMotion can mix vector graphics and bitmap images in the same composition. LiveMotion also allows combining of bitmap and vector images in novel ways.

Every object, including imported JPEG GIF and other bitmap images, can have up to 99 layers—a simple click in the Layer palette adds a new layer. The new layer will have the same shape and content as the original object and will be immediately below it—seemingly out of sight. However, you can still change the layer's colour, texture, or image.

> LiveMotion not only provides four types of 3D effects including cutout, bevel, ripple, and emboss; but also provides six slider controls for each

LiveMotion also allows users to control the opacity and transparency between layers. The interactions with gradients, colour settings and various textures are stunning. And I haven't mentioned yet any of the other goodies like Paste Special. This pastes from the object on the clipboard, your choice of its attributes image, texture, layer, fill, effects, transformations, or properties. Other goodies include texture and shape libraries that you can easily add to (just pop it into the file's folder) and more.

In short, graphical composition of text, vector graphics, and bitmap images are the pleasures of LiveMotion.

The black eye

But there is a fly, or actually bugs, in this sweet ointment. As noted before, LiveMotion exhibited a lot of bugs, but most (11 of my recorded crashes) were encountered while doing graphical combinations, particularly with filters and layers at the same time. Sometimes these combinations worked flawlessly and other times they would bring the program down with alarming regularity. The only other feature to cause more than two crashes was the timeline editor—three times, and again, all involved complex layer based animations.

What a black-eye! Without these bugs, LiveMotion would be an unconditional best buy recommendation not just for Web graphics developers but for illustrators and graphic artists in general primarily for the graphic composition capabilities. Now however although we rate the program 4.2 out of 5 (given a mandatory 0.5 deduction for bugs) a more cautious recommendation has to be made.

Continued on page 86

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Flash animation enlivens Web

Macromedia Flash enables Web artists to animate images, sounds, and multimedia in compact Flash file format for display on the Web.

By Jacques Surveyer

Macromedia Flash really impresses right out of the box. An easy installation is followed by an outstanding introductory tutorial. The tutorial is itself a Flash application, so examining its source code provides insights into how to create Flash productions. Also, Flash inherits some of Macromedia Freehand's great illustration tools, drawing tools and features. But the most remarkable thing about Flash is the amazing compression technology its developers have come up with in the form of their SWF Flash runtime file format.

Flash 4.0

From: Macromedia Inc.
600 Townsend St., San Francisco, CA 94103
http://www.macromedia.com
Minimum system requirements: Power Mac or 133 MHz Pentium, 32 MB RAM, Mac OS 7.5, Windows 98/NT
Street price: $400

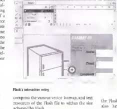
Summary: Flash is the best way to create compact animations of any complexity on the Web before having to resort to Director or Java.

Out of the box: Outstanding setup, tutorials and manual. Has two dozen Flash tutorials.

Pros: Easiest introduction into the increasingly complex world of Web animation and multimedia file presentation. Solid performance and very trim animation files.

Cons: Mastering the Timeline editor and programmability takes time. Bitmaps are second-class citizens in Flash space. Has no 3D or chat.

Overall rating: 4.5 out of 5



Flash's interactive entry

I took the 16 resources totalling 15KB from a Flash presentation and copied them into PaintShop Pro, Corel Draw and Macromedia's Freehand, where they grew to 33KB, 25KB and 24KB respectively. In some cases I had to duplicate some buttons and data text fields as vectors but try as I might I could not compress the various vector, bitmap, and text resources of the Flash file to within the size achieved by Flash.

This is one of the fundamental strengths of the Macromedia technology in Web programming—some of the best compression technology for Web resources required for animations. No wonder that the Flash plugin now comes as standard issue with some of the most popular browsers. And consider that the lone image file at 7KB took up nearly half of the SWF space—the rest of the space had to accommodate vector images, buttons, text plus the Flash animation instructions. Remarkable!

So this is the baseline strength of Flash, a program that allows users to develop Web-based animations that use all the popular PC multimedia tools, including vector graphics (Macromedia Freehand, AutoCAD DXF, AI or EPS, EMF or WMF), bitmap images (BMP, GIF, animated GIF, JPEG, PCT and PNG), movies (AVI or MOV), and sounds (WAV or MP3).

The unique additional characteristic of Flash (as opposed to Adobe LiveMotion's animations) is that they can be made interactive. This means more than just pressing buttons to jump to different parts of a movie/animation, but the ability to input text fields and incorporate that information into the later presentation/movie or to pass it along by using standard HTTP get/post functions to another Web site or database.

It is this combination of versatility, simple programmability and high compression of resources that has helped garner a steady increase in popularity of the Flash format. However, Java wars have also helped Flash and its developer, Macromedia.

Now that Sun and Microsoft are locked in a legal dispute, and Microsoft no longer supporting Java 1.2 in its browser (making it an option rather than the previous default load of the JVM), use of Java applets has fallen off in all but the most complex of Web applications. But Flash has its own niche, and its multimedia versatility has garnered favour among Web developers seeking broad reach to a wide range of Web users.

Features

In order to achieve its superior file compression capabilities, Flash is vector graphics oriented. And it shows in the Flash drawing tools which borrow a lot of nifty features from Macromedia's own fine vector graphics program, Freehand. Take the pen drawing tool for example. Press a button and the Pen tool switches from a straight line to a smooth curve tool (for creating elegant Bezier curves). Click the Pen type button again and you have an Ink Pen capable of tracking very faithfully all the intricate mouse movements, with control settings that allow for some smoothing.

Likewise the *Eraser* tool has five modes of operations selected by button. Erase Normal erases everything touched. Erase Fill erases just the portion of a fill area touched by the eraser, leaving any lines or bounding curves. Erase Lines does the opposite, leaving the fill but erasing any touched portion of lines or bounding curves. Erase Inside only erases if the stroke always remains inside a container. Erase Selected Fills only erases fills that have been previously selected. Ditto for the Fill tool and so on. In sum, although you can import your graphics, many Flash users create their graphics directly in Flash.

Bitmap images on the other hand (perhaps because they are expensive in terms of byte size) have only simple operations available to them. You can move, resize and rotate a bitmap block. Also Flash has built in a Trace BitMap command for converting bitmaps to vector curves to save space.

Contrast Flash's fairly simple bitmap operations with Adobe's recently introduced LiveMotion, which allows users to combine bitmaps, vector and text in very novel ways. But having conceded this bitmap advantage to LiveMotion, Flash more than holds its own with its vector graphics, text, sound and movie handling and functionality.

The same advantage extends to text in Flash. Unlike LiveMotion, Flash supports either display or interactive text fields. The latter allows Flash designers to place text fields in a movie, validate any data entered then change the movie scene depending on,

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Flash animation enlivens Web

Continued from page 23

and/or using the data entered, or post the data input on to other Web applications. Yet, just as in LiveMotion, Flash users have fairly comprehensive control over text, including font type, colour, size, kerning and spacing. Blocks of text can be moved, scaled, rotated, skewed and toggled between vertical or horizontal display. For ultimate control, text can be broken apart and the individual letters resized, coloured, skewed etc.

In handling sound and movies, Flash really steps out. Sound can be either an event sound (it must be completely downloaded before used) or streamed (usable as soon as enough of the sound has been loaded into a buffer). Sounds can be attached to layers and buttons, and started and stopped by events as well as timeline duration settings. In addition, each sound can be edited within Flash for such effects as Fade in, Fade out, Left or Right Channel switch, plus custom effects over the duration of the sound set by clicking volume lines in a graphic display of the sound waves. Very nice indeed.

Likewise for incorporating movies, Flash allows a QuickTime movie box to be scaled, rotated and animated. In addition, the QuickTime Movie can be edited for start and stop clips in a frame. Finally a QuickTime movie can be re-used several times, either by placing it in several different scenes or by using different layers. Thus one Flash movie with a single QuickTime can be sent out, then depending on the user's input, different parts of the QuickTime movie presentation can be shown.

Animation in Flash and LiveMotion

In basic outline, Flash and LiveMotion follow the same basic path (who copied whom is up to historians). Both apply special treatment for buttons (Rollovers in LiveMotion) so you can specify up, over, down, out and user customized states and corresponding actions. Both allow for inclusion of animated GIFs (but only Flash allows for QuickTime movies). Both have Timeline editors which at first glance look remarkable similar with layers, timeguide, frames and keyframes and tweening of effects.

But LiveMotion has taken the approach that every object in a composition should be on the Timeline even if it is static in the scene. In contrast, Flash takes the approach that objects to be used in the movie have to be declared as symbols at which point they become sharable resources as they are automatically put into the movie's library of resources (or Symbols in Flash speak). However, to appear in a movie, an object has to be specifically inserted into one or more layers of the Timeline editor, then with insertion by means of keyframe markers, the entry and exit of scene/performers/objects can be controlled.

It is a little less work in LiveMotion to create sequences, but there is less clutter in Flash. In addition, Flash allows users to create several scenes in a movie, where a common set of resources is available for each new empty Timeline. Progression from one scene to another (and back as required) is under user control. Flash also allows other SWF files to be loaded and run—think of them as standard starters or trailers or even emergency content clip-ons. Finally Flash exposes more of its programmability—which includes variables, if then, and looping—to the Web designer than LiveMotion. This is a double edged sword—allowing for much richer animation and movie sequences at the cost of coding that is harder to understand

Continued on page 46

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4560XDVD [illegible] $4150
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Hollywood [illegible] dable card $[illegible]

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Yamaha eide 8x4x32x Int $300/380
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[illegible] Subwoofer 480W $10 $35
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Rock[illegible] 2000 Subwoofer w 4 spkr $50
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[illegible]

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[illegible] $1190
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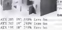

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The Web in La La Land

Report from WebLA

By Keith Schengili-Roberts

If you work for any given profession chances are good that there is a trade show or conference that caters to it. Not surprisingly then, a number of shows have been developed in recent years catering to those who create, manage or work with Web-related technologies The most widely known of these are the Web shows (WebBoston, Web2000 etc)—touring conferences that take over the convention centres in major American cities for about a week. The most recent of these conferences was WebLA, held in Pasadena Calif in late May

Keynote: Future of Net (and regular) TV

In a city that has defined show business, a number of the sessions including the keynote speech, focused on how new media is redefining entertainment, both on and off of the Web Streaming video in particular has really taken off recently as seen in the popularity of such sites as AdCritic (http://www.adcritic.com/), MSNBC (http://www.msnbc.com) and pseudo.com (http://www.pseudo.com)

It was therefore appropriate that Jeanne Meyer vice president of New York based pseudo.com, delivered the show's keynote address In her talk called "The revolution will be televised—on the Internet," she described how TV will evolve

It is estimated that shortly, up to half a billion people will have a connection to the Internet. The North American audience represents the largest piece of this global pie and streaming video is rapidly becoming one of the most popular media used on the Net Traditionally streaming video requires some sort of broadband connection to be viable, as modems can take an extremely long time to download files As a result and seeing the potential in the medium, Intel has announced that it will spend US$200 million towards research devoted to improving the quality of streaming video

This of course is all good news for a company like pseudo com whose business is providing "broadcasts" using streaming media from its Web site. Meyer claims that North American audiences are restless for interactive media and this is where pseudo.com fits into the picture. Pseudo com has found its market by creating shows catering to niche audiences who are poorly served by traditional media, and carrying programs on such diverse subjects as Hip Hop, House Electronica and various other music genres plus shows on video games, space news, politics and more And while the production values may not be up to those of typical broadcast media, audiences lap it up

> While the production values may not be up to those of typical broadcast media, audiences lap it up.

Based on her work in the industry and the trends she sees, Meyer made several predictions about the future of television. First, she believes that current television formats (i.e. sitcoms, docudramas etc.) will die as the medium becomes increasingly interactive and viewers demand more input Second the line between entertainment and commerce with further blur She pointed to the Web-based Nike TV as an example of this. Third, she expects audiences will contribute as much and be as integral to the experience of any given show as the show's producer is The spread of technology also makes it possible for viable content to be produced anywhere, and that audiences will find programming as deep as their interest level. Finally—and not surprisingly given the previous predictions—Meyer also believes traditional media will be forced to redefine their offerings in order to compete

Don't over hype and under deliver

The audience attending the keynote lapped all of this up but also on the minds of many was the recent failure of boo.com, a streaming video portal widely known as "the West Coast's pseudo.com When asked about this, it was obvious that Meyer had given it some real thought offering up a number of reasons why she thought the firm failed.

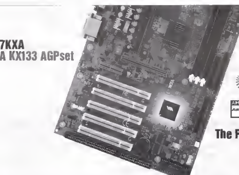
Meyer noted that Boo.com had spent a lot of advertising dollars promoting the site well before it was actually launched with the end result under whelming a lot of people The verdict don't over hype and then under-deliver on the Web She said there was also a scandal over poor booking practices that was widely publicized by the *Wall Street Journal.* Finally, Meyer said she felt boo com simply spent too much on producing its shows. While evasive about the costs of producing pseudo.com's shows, she did say that cheap and cheerful is OK so long as you have a loyal audience that will put up with rough edges.

WebLA also hosted a relatively small trade-show floor, which companies and organizations including Adobe, IBM Webgrrls International and the Association of Web Professionals shared information and debuted products.

Presentations were given by such Web luminaries as Jeffrey Veen, the executive interface director for HotWired and WebMonkey; Molly Holzschlag, author of many popular titles about Web coding and contributor to WebReview; and Jodi Sax, the entertainment and intellectual property lawyer who started lawgirl com (http://www.lawgirl.com)

All in all, it was a good show for those wanting to learn more about how to create more effective Web sites

The next show WebDC will be held in Washington D C Aug 7 11 For more information, see http://www.web2000show.com ❑



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SB Live
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Riva TNT2 32M AGP

CPU	Price	Lease
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P-III 933	CALL	

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Options: Windows 98SE ***+$138*** • Acer 56K V.90 V/F/Modem (HW) ***+$50*** • Acer 10BT Ethernet Card ***+$18*** • MS Windows 2000 Pro ***+$208*** • MS Office 2000 SBE ***+$288*** • MS Office 2000 Pro ***+$468***

Power/Budget Maximizer

Celeron Net-Surfer

ECS Dual-Slot Mainboard
64MB PC100MHz SDRAM
10GB Ultra66 HDD
Panasonic 1.44MB FDD
3D 8M AGP Video
Acer 107 Win 98 Keyboard
17" ATX Tower
MS Trekker Mouse + Pad
48x CD-ROM
3D Wave Stereo Sound
120W Stereo Speakers
56K Modem & 10/100 BaseT LAN
15" SVGA Monitor +$100

64MB
10GB
56K Modem
10/100 LAN

CPU	Price	Lease
C-500MHz	648	[illegible]
C-533MHz	668	[illegible]
C-566MHz	698	[illegible]
C-600MHz	768	[illegible]

Celeron WorkHorse

Gigabyte 6VXE7+ Mainboard
133MHz FSB & UDMA66 Ready
64MB PC100MHz SDRAM
10.2GB Ultra66 HDD
Panasonic 1.44MB FDD
ATI Rage 3D 8M AGP Video
Samsung 750S 17" Monitor
Acer 107 Win 98 Keyboard
17" ATX Case w/ 250W P/S
Acer Wheel Mouse + Pad
48x U DMA CD-ROM
Acer 3D Wave Stereo Sound
120W Stereo Speakers

64MB
10.2GB
Samsung 17" .24 Monitor
ATI 8M Video

CPU	Price	Lease
C-500MHz	968	[illegible]
C-533MHz	998	[illegible]
C-566MHz	1028	[illegible]
C-600MHz	1088	[illegible]

AMD Athlon (K7) PowerMax

Athlon Dream Machine

AMD Athlon (K7) CPU
Gigabyte Athlon M/B
64MB PC133MHz SDRAM
10GB Ultra66 HDD
Panasonic 1.44MB 3.5" FDD
Riva TNT2 32M AGP
Samsung 750S 17" .24 Monitor
Multimedia Keyboard
ATX Tower w/ 300W P/S
MS Wheel Mouse
Creative 52X CD-ROM
SoundBlaster PCI 128
280W Stereo Speakers

64MB
10GB
Riva TNT2 32M
Samsung 17" .24 Monitor
52X CD
SB PCI128

CPU	Price	Lease
K7 600	1228	[illegible]
K7 650	1288	[illegible]
K7 700	1308	[illegible]
K7 750	1368	[illegible]
K7 800	1448	[illegible]

Athlon DVD Theatre

AMD Athlon (K7) CPU
Gigabyte Athlon M/B
128MB PC133MHz SDRAM
20GB Ultra66 HDD
Panasonic 1.44MB 3.5" FDD
Riva TNT2 32M AGP
Samsung 750S 17" .24 Monitor
Multimedia Keyboard
ATX Tower w/ 300W P/S
MS Wheel Mouse
Panasonic 8X DVD
SoundBlaster Live 1024
ML-400 Speakers + Subwoofer

128MB
20GB
Riva TNT2 32M
Samsung 17" .24 Monitor
8X DVD
SB Live

CPU	Price	Lease
K7 700	1598	[illegible]
K7 750	1668	[illegible]
K7 800	1738	[illegible]
K7 850	1888	[illegible]
K7 900	2068	[illegible]

All Celeron & AMD systems come with 3-year service & 1-year parts warranty and one month FREE internet

Options: Windows 98SE ***+$138*** • Acer 56K V.90 V/F/Modem ***+$50*** • Acer 10BT Ethernet Card ***+$18*** • MS Windows 2000 Pro ***+$208*** • MS Office 2000 SBE ***+$288***

CPU/RAM

16M 72pin EDO 2x8/ 4x4	$65/70
32M 72pin EDO 2x8/ 4x4	$106/120
32M PC100 SDRAM OEM/ Major	$55/60
64M PC100 SDRAM OEM/ Major	**$105/115**
128M PC100 SDRAM OEM/ Major	**$205/215**
256/ 512M PC100 SDRAM	$435/868
64M PC133 SDRAM OEM/ Major	**$108/118**
128M PC133 SDRAM OEM/ Major	**$208/228**
256/ 512M PC133 SDRAM	$468/898
128/ 256M PC100 ECC SDRAM	$260/510
128/ 256M PC133 ECC SDRAM	$268/530
128M RDRAM 400/800MHz	$618/838
AMD CPU	
K7 550/ 600/ 650	**$138/215/238**
K7 700/ 750/ 800	**$253/306/368**
K7 850/ 900/ 950	**$428/686/938**
Intel CPU	
Celeron 500/533/566	$148/160/185
P-III 650/667/700/733	$348/338/388/398
P-III 750/800/866/933	$525/598/828/918

Motherboards

Athlon (K7) Motherboard	
Abit KA7/ KA7 100	**$228/246**
ASUS K7V-RM/ K7V	**$228/238**
Gigabyte 7VM/ 7VX	**$178/188**
Celeron / P-III Motherboard	
ABIT VA6/ VT6	$128/148
Asus P3V/ P3V4X	**$128/158**
Asus CUV4X	$168
Asus P2BD/P2BS/P2BDS	$308/448/648
Gigabyte 6VXE7+/ 6VX7-4X	**$118/148**
Intel VC820	**$228**
Intel N440BX/ L440GX (server)	$700/720

Drives & Controllers

Fujitsu (UDMA66 IDE/ U2W SCSI)	
10.2/ 20G	**$118/158**
10/13.2/20/27G 7200rpm	$168/188/228/298
9.1/ 18.2G U2W SCSI	$318/498
IBM (7200rpm IDE, U2W SCSI)	
20/ 45G U-DMA 7200rpm	**$238/428**
9/ 18G U2W SCSI	$298/448
Maxtor (Ultra 66 IDE)	
10.2/ 15/ 20G	**$128/145/168**
30/ 40/ 60G	$218/298/448
15/ 20/ 30/ 40G 7200rpm	$175/218/278/390
Quantum (UDMA66 IDE/ U2W SCSI)	
LM 15/ 20/ 30G 7200rpm	**$170/220/268**
Atlas V 9.1/ 18.2G U2W SCSI	$328/548
Seagate (U2W SCSI)	
Barr 9.1/ 18G U2W SCSI	$468/798
Cheetah 9.1/ 18G U2W SCSI	$468/798
Western Digital (U-DMA IDE)	
10/ 15/ 20/ 30G	$138/148/160/230
15/ 20/ 27G 7200rpm	$168/208/298
Adaptec (SCSI Adapter)	
2930U/ 2930U2	**$138/328**
2940 U2W/ U2W Kit	$328/388
29160 U160 Kit	$448
Tekram 310/ 390F SCSI Adapter	$68/148

Tape Backup

Tecmar Ditto Max Pro 10G Int.	$318
Onstream 30G IDE/SCSI Int.	$408/488
Onstream 50G SCSI Int.	$868
Onstream 30G Disc (3-pack)	$138
Seagate 8GB TR-4 Int. IDE/SCSI	$288/358
Seagate 8GB DAT SCSI Int	$738

Scanners

Acer 640U/ 640BU/ 620UT	$118/168/178
AGFA Snapscan 1212P/ 1212U	$118/120
Canon 330P (-$30 rebate)	**$138**
Canon 630P (-$30)	**$148**
Canon 630U (-$30)	**$168**
Epson 610/ 636U/ 1200U	$218/278/348
HP 4200C/ 5300 USB	**$198/358**
HP 6300C/ 6350C USB	**$558/698**
Primax 600P (-$45)	$78
Visioneer OneTouch 7600 USB	**$148**
Visioneer Colorado 19200 USB	**$118**

CD / DVD / Sound

Acer 40x/ 48x/ 52x CD-ROM	$50/55/68
Creative 52x/ Toshiba 48x	$68/68
Asus 8x DVD/ LG 8x DVD	$168/168
Pioneer 16x IDE/ 6xSCSI DVD	$188/168
Sigma DVD Controller PCI	$58
Acer 3D Wave PnP Sound PCI	$22
SoundBlaster Ensoniq/ 128 PCI	$38/50
SoundBlaster PCI 512/ Live 1024	$70/78
SoundBlaster Live Platinum	**$268**
SoundBlaster Live MP3	**$138**
SoundBlaster Live Xgamer	**$138**

ZIP / JAZ / LS120

ZIP 100M IDE / Para / USB	**$78/148/168**
ZIP 250M IDE/ Para/ SCSI	$218/218/228
ZIP 100M/ 250M Disc	$13/25
JAZ 2G SCSI Int./ Ext.	$448/460
JAZ 1G/ 2G Disc	**$115/128**
JAZ SCSI to Parallel Adapter	$60
LS120 Super FDD Int./ Ext.	$98/228
LS120 Disc	$13

Modems/Camera

Acer 56K V.90 Voice/Fax PCI (HW)	**$48**
USR 56K V.90 Fax Modem SW/ HW	$55/88
Creative WebCam Para / USB	**$88/98**
Creative WebCam Go USB	**$198**
Intel PC Camera USB / Pro	**$118/178**
Logitech QuickCam Express USB	$98

Spkr/ Mice/ KB/ Cases

USB Adapter / Hub	
PCI to USB Card	**$48**
USB 4 Port Hub	**$56**
Speaker	
120/ 260/ 600W + subwoofer	$15/25/38
Altec ACS 33/ 45/ 54/ 48	$58/98/108/178
Altec ACS ADA 305/ 880	$238/368
Creative 4 point FPS1000/2000	**$168/218**
Creative Theatre 5.1	$368
Yamaha MS 50 speaker/subwoofer	$80
Yamaha M20 speaker & subwoofer	$88
Mouse	
Logitech 2B/ 3B/ wheel mouse	$12/18/20
MS Intellimouse / USB	$28/32
MS Optical wheel mouse	$98
Keyboard	
Acer 107/ Fujitsu 6725	$13/20
Logitech Cordless KB & Wheelmouse	**$128**
Logitech iTouch Pro (KB & mouse)	$108
MS Natural Keyboard / USB	$32/88
Case & Fan	
AT 15"/ 18" Case & 250W P/S	$38/48
ATX 17"/ 18" Case & 250W P/S	$45/55
ATX 18" Case & 300W P/S	$85
Removable HDD Drawer 33/ 66	$25/35
External HDD/CD Rom Holder	$80
Slot Fan / HDD Fan	$12/15

Printers

Color Printer	
Canon 1000SE/2100(-$20-$30)	**$78/168**
Canon 3000 (-$30)	**$168**
Canon 5100 / 6100 (-$0/-$30)	**$178/288**
Epson 440 / 670	**$118/138**
Epson 740/ 740i (-$75/-$75)	$148/188
Epson 760 / 750 (-$45)	$198/368
Epson 850/800/870 (-$75)	$608/218/408
Epson 1160/1200/1270 (-$100)	$560/578/578
HP 840 / 895	$258/360
HP 930/ 950 / 970	**$298/428/448**
HP 1120 / 1220/ 2000	$535/848/675
Lexmark Z11/ 3200	**$88/138**
Lexmark Z31 / Z51 / Z52	**$148/238/288**
Laser Printer	
Brother 1030/ 1240DX	**$368/448**
Brother 1270N (Network Ready)	**$598**
Brother 8600MFC/ 9600MFC	$748/968
Brother 2400C/ 2400CH Color	$2668/3198
HP 1100/ 2100/ 2100TN	**$558/978/1448**
HP 1100A/ 3100C MFC	$698/968
HP 3150	**$628**
HP 4050/ N	$1588/2068
HP 4050 TN	$2288
HP 5000/ N	$2098/2588
HP 5000 GN	$3798
HP 8000/ N	$2968/3685
HP 8000 DN	$4330
HP 8100/ N	$3768/4198
HP 8100 DN	$4848
HP 4500/ N Color	$3838/4198
HP 4500 DN Color	$5398
HP 8500/ N Color	$8388/9498
HP 8500 DN Color	$11938
Lexmark Optra 1625/ 1625N	$1458/1828
Lexmark Optra 1855/ 1855N	$1588/2098
Samsung 5100A/ 6050 (-$50/ $50)	$298/358
Samsung 4500C MFC	$338

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ICI Book-PC

Ideal for Internet Surf & Office Workstation
(Amazingly Small: in Notebook Size)

- 64MB RAM
- 10.2G HDD
- 52X CD-ROM
- Intel 810 100MHz M/B
- 56Kv90 Modem
- 10/100 Fast Ethernet
- 3D AGP Video
- 3D Stereo Sound
- TV out (composite & S-Video)
- Keyboard/Mouse/Speaker

Intel Celeron 500MHz CPU

$668

272x295x82mm

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Authorized Solution Provider
For 2000

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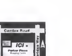

Network Solution

- Intel Authorized Solution provider
- Total networking & Internet Solution
- Internet sharing: 56K, Cable modem, ADSL
- File sharing; printer sharing
- **Full range Networking support.** cabling, installation, routers, switches, hubs.
- Virtual private networking
- We plan and install network for business and home
- PLEASE CALL FOR A FREE ON-SITE CONSULTATION

CD Writers

Creative 8-32 Int. IDE Kit (8x4x32)	$298
HP 8250 Int. IDE Kit (4x4x24)	$268
HP 9310i Int. IDE Kit (10x4x32)	$388
HP 9210i Int. SCSI Kit (8x4x32)	$378
HP 9210e Ext. SCSI Kit (8x4x32)	$458
HP 8210e Ext. USB Kit	$398
HP 8200e Ext. SCSI/ PCMCIA	$498
Panasonic 8432 IDE CD-RW	$258
Plextor 8432 Int. IDE CD-RW Kit	$338
Sony 8432 Int. IDE CD-RW Kit	$278
Yamaha 8424 Int. IDE Kit	$308/388
Yamaha 8424 Int. SCSI Kit	$338/388
Yamaha 8424 Ext. SCSI Kit	$548

CD-R/ RW Media

BASF/Sony CD-R (10pc)	$12/15.80
8X CD-R (10x10pc)	$10/98
Prince 80min CD-R (1/10pc)	$2/18
BASF/Sony CD-Rewritable	$3.5/6.8

ICI Linux Net Server

Complete Server Solution:

- **Connect all your computers to the Internet** (using one account)
- **Firewall solution included**
- **Website hosting** (Intranet or Extranet)
- **E-mail server:** manage company e-mail
- **Fax server:** send and receive faxes
- **File server:** share large files easily
- **Browser based setup:** zero effort maintenance

Complete Hardware Solution:

- Pentium III 667MHz CPU
- Asus CUV4X Motherboard
- 64 MB SDRAM
- 20 GB Ultra66 Hard Drive
- 1.44MB FDD & 48X CD-ROM
- ATI 8M RageIIC AGP Video
- 18" ATX Tower
- Dual 10/100 Ethernet card

Complete Software Solution:

- Nowlix Server
- 25 client licenses

$1368

NoteBook / Mobile Solution

IBM

i1210	C-500	32M	6G	12.1HPA	24X	56K	$1788
i1230	C-500	64M	6G	13HPA	24X	56K	$2088
i1250	C-500	64M	6G	12.1TFT	24X	56K	$2488
i1492	PIII-500	64M	12G	15TFT	DVD	56K	$3998
A20m	PIII-500	64M	6G	12.1TFT	24X	56K+LAN	$3188
A20m	PIII-700	64M	12G	14.1TFT	24X	56K+LAN	$4188
A20p	PIII-700	128M	18G	15TFT	DVD	56K+LAN	$5968
T20	PIII-650	128M	6G	13.3TFT	24X	56K+LAN	$4688
T20	PIII-700	128M	12G	14.1TFT	DVD	56K+LAN	$5588

Acer

507DX	C-466	32M	4.8G	12.1HPA	24X	56K	$1838
508T	C-500	64M	4.8G	12.1TFT	24X	56K	$2088
514TXV	C-600	64M	6G	14.1TFT	DVD	56K	$2888
521TE	PIII-500	64M	6G	13.3TFT	24X	56K	$2888
521TXV	PIII-500	64M	6G	14.1TFT	DVD	56K	$3228
735TLV	PIII-650	128M	12G	15TFT	DVD	56K+LAN	$3898
735TL	PIII-650	128M	18G	15TFT	24X	56K+LAN	$4388
737TLV	PIII-700	128M	18G	15TFT	DVD	56K LAN	$4188

HP HANDHELD PC

HP Jornade 540 (16M) 548 (32M)	$648/778
HP Jornade 680 (16M/680)/690 (32M/690)	$1168/1288
HP Jornade 820 (16M 56K/ 640x480)	$1330

3Com

PalmPilot IIIe/ IIIxe/ IIIc	$218/338/596
PalmPilot V/ Vx	$448/548

TOSHIBA

2230CDS	C 550	32M	6G	12.1DSTN	24X	56K	$2088
4270Xcvr	C 500	64M	6G	14.1TFT	DVD	56K	$2988
4270Zcvr	C-500	64M	12G	15TFT	DVD	56K	$3448
4260Xcvr	PII-450	64M	12G	14.1TFT	DVD	56K	$3398
4300	PII-600	64M	12G	14.1TFT	DVD	56K	$3098
8100	PIII 500	64M	12G	14.1TFT	DVD	56K	$4288
8100	PIII-650	128M	18G	14.1TFT	DVD	56K	$4898

NoteBook Add-On's

PCMCIA CARD

Adaptec 1350 Mini SCSI Parallel Port Kit	$88
Adaptec 1460D 1480A SlimSCSI Kit	$170/245
Intel Pro100 LAN CardBus (Realport)	$128
Intel Pro100 LAN+56K Modem Cardbus Realport	$288
Linksys 10BT Ethernet PCMCIA	$78
MegaHertz 3CCFEM556 56K Modem+10/100	$308
Xircom Realport 56K V.90 + 10/100 BT	$398

PORTABLE CD-ROM & CD-WRITER

HP 8200e 4X4X20 CD-RW PCMCIA/SCSI	$458
Micro Solution Bantam 24X CD ROM	$238
Micro Solution Bantam 24X CD w/Sound	$285
Micro Solution 4X4X20 CD-Writer/Dualport	$418/448

NOTEBOOK MEMORY & HDD & CASE

32/ 64/ 128M	$80/120/238 & up
Micro Solution Backpack 1.44MB FD	$198
IBM 6/ 12/ 18/ 25GB 2.5" HDD	$248/348 528/768
Toshiba 6/ 12/ 18GB 2.5" HDD	$228/318/428
Targus Notepac CN01/CN20	$41/30

Display Centre

Video Card

3D Labs Oxygen VX1 32M AGP	$298
Asus 3800 TNT2 32M w/3D Glasses	$198/268
Asus 6600 GeForce 32M Deluxe	$308
Asus 6600 GeForce 32M DDR Deluxe	$348
Asus GeForce 64M Pure/ DDR	$278/418
Asus V7700 GTS 32M DDR	$478
ATI Rage 3D 8M Xpert 128 16M AGP	$48/108
ATI Xpert 2000 32M AGP	$108
ATI Rage Fury 32MB 32MM Pro	$168/188
ATI Rage Fury MAXX 64MB 4xAGP	$280
ATI All-in wonder 128 16M 32M	$218/258
ATI All-in wonder Pro 32M	$360
Creative GeForce 32M/ Pro 32M	$328/378
Diamond Stealth III 16M / 32M	$88/108
Matrox Millennium G400 16M / 32M	$148/198
Matrox G400 32M Dual Head/ Max	$228/288
Matrox G400 TV 16M	$384
Voodoo3 2000/3000/3500 16M	$118/168/278

Monitors

ADC 17" 7Gir .25 / 19" 9Glr .26	$278/388
Acara/Proview 15" / 17" / 19"	$180/268/388
Mitsubishi 18" DP91/ 22" DP200	$788/1448
Mitsubishi 17" DP710S 19" DP900U	$578/848
NEC 17" AS70/ A700+ / E750	$308/368/628
NEC FE700 / FE700M / FE750	$398/468/448
NEC FE950 / FE1250	$638/1268
NEC FP950 / P1250+	$798/1368
Panasonic 17" E70 SL75 / PL70	$318/368/488
Panasonic SL95 19 / P110 21	$638/1158
Samsung 550S 15 / 750S 17" .27	$198/268
Sony E200, G200	$548/598
Sony 18" E400 G400	$768/868
Sony E500 / G500 / F500	$1498 1598/2528

LCD Panel

NEC 1525V 1525M 15"	$1298/1498
NEC 1525X/ 1525S 15"	$1768/2448
NEC 1810-1 18 / 2010-1 20"	$4198/6398
Panasonic LC50 15"/ LC90S 19"	$1558/5678
Samsung 570S/ 570B	$1298/1398
Viewsonic L700 15"	$1328
Viewsonic VE 150/ VP 150	$1388/1550
Viewsonic VPA 150 15"	$1598
Viewsonic VG 150 15"	$1538
Viewsonic VPD 150/ VP 151	$1498/2088
Viewsonic VP181 18" (digital)	$4298

Viewsonic Monitors

E771	17"	.27mm	1280x1024	$318
E773	17"	.25mm	1600x1280	$378
EF70	17"	.25mm	1600x1280	$398
G773	17"	.26mm	1280x1024	$398
GS773	17"	.22mm	1280x1024	$428
PF77	17"	.25mm	1600x1280	$528
PF775	17"	.25mm	1800x1280	$478
PS775	17"	.25mm	1600x1280	$468
E790	19"	.26mm	1600x1280	$528
GS790	19"	.26mm	1600x1280	$598
PF790	19"	.25mm	1600x1280	$658
PF795	19"	.25mm	1920x1440	$838
PS790	19"	.25mm	1600x1280	$718
P810	21"	.25mm	1600x1280	$1168
P815	21"	.25mm	1800x1440	$1268
PF815	21"	.25mm	1920x1440	$1288

Network Products Centre

Intel Product Line

Network Adapter

Intel 8460B 10/100 Management Adapter	$65
Intel 8470R 10/100 Server Adapter	$138
Intel 8472B 10/100 Dual-Port Server Adapter	$268
Intel 8490 Gigabit Server Adapter	$828

Hub & Switch

Intel In-Business SH10T5 5 Port Hub (10BT)	$70
Intel In-Business SH10T8 8 Port Hub (10BT)	$88
Intel In-Business SH100TX4 4 Port Hub (10/100)	$145
Intel In-Business SH100TX8 8 Port Hub (10/100)	$228
Intel In-Business SH101TX8 8 Port 10/100 Hub	$228
Intel In-Business SS101TX4 4 Port 10/100 Switch	$218
Intel In-Business SS101TX8 8 Port 10/100 Switch	$288
Intel Express 330T Stackable 16 Port Hub (10/100)	$768
Intel Express 330T Stackable 24 Port Hub (10/100)	$1100
Intel Express 410T Standalone 16 Port Switch (10/100)	$880
Intel Express 410T Standalone 24 Port Switch (10/100)	$1175
Intel Express 460T Standalone 16 Port Switch (10/100)	$1350
Intel Express 460T Standalone 24 Port Switch (10/100)	$1480
Intel Express 520T Scalable 12 Port Switch (10/100)	$1910
Intel Express 5801 Scalable Routing Switch	$2888

Printer Server

Intel Netport Express 10/100 Ext. Printer Server 1 Port	$198
Intel Netport Express 10/100 Ext. Printer Server 3 Port	$438
Intel InBusiness Printer Station 10/100 2 Port	$228

InBusiness Station

Intel InBusiness Internet Station	$488
Intel InBusiness E-Mail Station	$368
Intel InBusiness Storage Station 12G/24G	$1268/1708
Intel InBusiness Small Office Network Station (8 port Hub 13G Storage & Backup / E-Mail / Firewall Printer Server)	$1788
Intel InBusiness Small Office Network Plus Station (same as above with additional 13G for mirroring)	$2468

Virtual Private Network

Intel Shiva VPN Gateway Express	$5878

3COM & D-Link

Network Adapter

3COM 3C905B-TX 10/100 PCI Adapter	$68
Acer 10BT Combo/ 10/100 PCI Adapter	$19/25
D-Link DFE-530TX 10/100 PCI Adapter	$35

Home/Office Network Kit

D-Link DFE-906 4 Port 10/100 Hub/2xNIC/2xCable	$155
Linksys 5 Port 10BT Hub/2xNIC/2x cable	$78
Linksys EtherFast Cable/DSL Router (Built-in 4-Port 10/100 switch, Firewall & Single IP Address Feature)	$288

10 BaseT Hubs

3COM 3C16260 5 Port Hub	$80
3COM 3C16440 SS II Entry Hub 12 Port	$220
3COM 3C16441 SS II Entry Hub 24 Port	$338
3COM 3C16700 OfficeConnect 8/TPO	$116
D-Link DE-805 TP/C 5 Port Hub	$60
D-Link DE-809 TC 8 Port Hub	$88

100Mbps Hubs & Switches

3COM 3C16750 OfficeConnect 8 Port 10/100BT	$208
3COM 3C16751 OfficeConnect 16 Port 10/100BT	$338
D-Link DSH-5 10/100 5 Port Hub	$105
D-Link DSH-8 10/100 8 Port Hub	$150
D-Link DSH-16 10/100 16 Port Hub	$288
3COM 3C16951 SS-II 10 Switch 1100 12 Port	$960
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The question of content

Continued from page 14

tion for themselves, corporations are also recognizing new media's ability to deliver a message.

Joseph Carusone, senior vice-president of Stockhouse Media Corp. (http://stockhouse.com) doesn't plan to let his company's award-winning investment Web site get left in the digital dust.

"We've already got fully developed plans for broadband content and streaming. I think the battleground is going to shift to streaming. A lot of users are captivated by the novelty of it so we want to get into broadband early, take a lead and explore where it takes us. We're going to be providing the content we've always provided but as video. I expect that will be standard issue in the next 12 months for any Web site that wants to be taken seriously."

> "More and more I'm seeing content that's been developed exclusively for the Internet rather than simply some story or article that's been repurposed and posted to a Web site."
>
> —*Beverly Wood, content provider*

Winston Barta, vice president of business development for Globalmedia.com, sees content as a way to not only bring users to a Web site, but also as a way to generate revenue.

"Right now sites that provide content are realizing that it's an expense, but we are trying to lead the shift from content being an expense to being a revenue item, by offering ways of advertising, and, as the technology develops, tying in advertising to content, so that if you are watching something and you see a coffee table you like, you can click on the coffee table to buy it or get information about where to find it."

Content is the write stuff

In the rush to bring broadband to the people, make Web sites more than e-brochures and replace the doughty business card with itty-bitty CD-ROMs, who benefits? The general public benefits from the ability to self-direct their entertainment experiences. Companies benefit from the ties content has developed with commerce. But, if any one group gets the lion's share of rewards from the content craze, it has to be the producers, writers, and animators who are turning your computer into a cyberspatial amalgam of Disneyland, the Smithsonian, and the West Edmonton Mall.

"There's a much better market for writers," says Skaper, "because they can leverage their articles across several avenues and realize much better word rates than in traditional media. Another thing that writers should be excited about is that search engines need something to read to find your Web site. That creates a demand for content.

"The move towards broadband content is also exciting. I can see so many applications with broadband, like virtual attendance at conferences that you don't have the money or time to attend in person, or another example is House of Blues, where for a nominal fee you can see a live Webcast of a concert. Obviously, they concentrate on audio quality over video, but it's still a chance to see a concert live from a famous venue."

Wood also likes the Internet's demand for content.

"More and more I'm seeing content that's been developed exclusively for the Internet rather than simply some story or article that's been repurposed and posted to a Web site. This is good for content creators. It expands the market and helps to avoid something that writers need to be aware of, the use of material they have created for print being published online. After all, if the Web version of a print magazine can charge additional costs for advertising on their Web site, the writer should also be paid for the content they are providing."

Pepper sees writers's strengths as integral to successful new media projects.

"Ordering the flow of information is typically a writer's task. Organizing that flow for new media is a complex job. Having a writer in the planning process of a project helps overall."

What's next for content?

The trend towards wireless is going to have its effect on the world of content. Companies are looking to the ways in which their content can be utilized by the small screens and limited graphics abilities of the current generation of PDAs. Content for that environment is likely to be information rather than entertainment, but as with most advances in computers and technology, predictions are hard to make.

In the home, the concept of "televison on the Internet" has taken hold of the public imagination. Just as MP3 and its ilk are forcing major changes to the music and radio industries, it's simply a matter of time and bandwidth before this innovation changes the way we view broadcast entertainment. ❑

Chris Keim is a Vancouver-based writer and video editor with a healthy obsession for bicycles and Ultimate. He can be reached at ckeim@direct.ca.

Hands On

Lab Test • Hardware Evaluations • Software & CD-ROM Reviews

Three at three megapixels

A quick look at megapixel cameras from Canon, Casio and Olympus

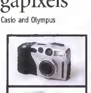
By Emru Townsend

It's remarkable how quickly digital cameras have matured. Four years ago, the image quality was barely comparable to videotape. Now, with the recent introduction of 3.3-megapixel cameras, 35mm film photography is being given a run for its money.

PowerShot S20
From: Canon
http://www.canon.ca
Street price: $1299
QV-3000EX
From: Casio Canada
http://www.casiocanada.com
Street price: $1199
C-3030 Zoom
From: Olympus
http://www.olympusamerica.com
Distributed in Canada by Carsen
Street price: $1499

Equally remarkable has been the (admittedly dwindling) persistence of naysayers. Though short sighted, the "digital cameras will never replace film" sentiment made sense in 1996, when most digital photos were at a lower resolution than your Windows desktop. But I was astonished when, earlier this year, a passerby interested in the Kodak DC290 I was using made that very same comment.

My feeling is that the technology may have progressed a little too quickly—so much so, that there are those whose preconceptions still have yet to catch up. I wish I could have shown that passerby a photo I took later that day: a friend, recently returned from Morocco, had intricate henna tattoos covering her hands, which I photographed from about 90 cm (3 ft.) away. When I later downloaded the photos, I was surprised to see not only the details of the tattoos, but the lines of her palm—and the DC290 isn't even a true 3.3-megapixel camera,



Olympus C-3030 Zoom (left), Casio QV-3000EX (top, right), Canon PowerShot S20 (above).

as it interpolates from a 2.1-megapixel CCD.

If the DC290 was surprising, the three 3.3-megapixel cameras I've since played with (the Canon PowerShot S20, the Casio QV-3000EX, and the Olympus C-3030 Zoom) are downright stunning. Serious photographers will be happy to note that the 2,048x1,536

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Compact Compaq

iPaq moves Compaq's handheld line to Pocket PC

By Sean Carruthers

While Compaq previously issued handheld devices using Microsoft's Windows CE operating system, the company is also one of the first to jump on Microsoft's new Windows for Pocket PC operating system. Like everyone trying out the new OS, Compaq is no doubt crossing its fingers that it may finally have a Palm killer in its midst. Is it enough? While Pocket PC is certainly a vast improvement over Windows CE, it may not be enough to sway fans of the Palm just yet.

iPaq Pocket PC
From: Compaq Canada
http://www.compaq.ca
1 800-567-1616
Suggested retail price: $699

The iPaq's size and weight are somewhere between the Palm III and the Palm V, which is tiny compared to previous Windows based handhelds. In this tiny form factor, however, it manages to fit a ton of features and functionality, including a 4,096 color TFT screen, audio recording and playback capabilities (including MP3), and a full 32 MB of onboard memory. All of this runs on an internal lithium ion battery.

Design-wise, it's a bit of a mixed bag. While it has a nice compact design, the polished steel look of the casing made the item a bit slippery in the hand, and difficult to keep a solid grip on. On the positive side, however, the model we looked at fits almost perfectly into the left hand, with the voice record button positioned perfectly for easy

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Special text effects for Web, print

By Peter Milburn

The key to competing with mammoth feature rich commercial applications from Adobe, Corel and Macromedia is to concentrate on performing specialized tasks extremely well. This seems to be the strategy of Strider Software with its release of Typestyler 3—an amazingly versatile special-effects type generator.

Typestyler 3
Company: Strider Software
Tel: 906-863-7798 http://www.typestyler.com
For: Macintosh
Price: US$149 (retail), US$129 (download), US$89
Pros: Simple to learn and use, but offers powerful special effects for both print and Web. Has flexible import/export options.
Cons: Menu organization could be improved. Has modal dialogue box interaction for many creation and editing operations.

Typestyler's history goes all the way back to 1986 when it made its debut on the Macintosh. Its unique text capabilities helped it ride the wave of the desktop publishing revolution of the day. However, as little as three years ago its development stagnated. The combination of the rise in popularity of the Mac and the Internet has fueled its developers and publishers to push this product to new heights.

Typestyler's forte is its ability to easily shape text into effects commonly seen in banners and large displays. Its Shape menu comes with more than 45 pre-defined envelopes that you can fine tune using palette tools and dialogue boxes. These effects range from circles, arches and arcs all the way to perspective, slant and twist effects and more.

But Typestyler is more than a one-trick pony. The real fun comes when you get to embellish the various envelope shapes with a myriad of funky styles and wild effects. Typestyler offers a virtually limitless combinations of effects that you can apply to the inline, fill and outline regions of your text. In addition to numerous embossing, chiselling, bumping and gloss effects, you can superimpose varying levels of noise, blurring and lighting.

At first glance, Typestyler has most of the tools you may be familiar with from other graphic applications. If you've used them, you'll be up to speed very quickly. Pull down menus invoke most of the program functions, but you can also quickly access dia-

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Three at three megapixels

Continued from page 34

pixel images can be reproduced at 25 cm (10 in.) wide—maybe more, depending on the paper and the JPEG compression settings—and remain indistinguishable from a 35mm snapshot. All three cameras turned in sharp, colourful images, picking up fine details in woven material and even the stubble on my seemingly clean-shaven jaw.

They will also be happy that all three cameras fared equally well when I used them in a variety of environments: indoors, outdoors, sunny, cloudy, well-lit and dark. Unlike some of the basic no-frills cameras of yesteryear, these cameras provide some of the same controls as a traditional single-lens reflex (SLR) camera, such as manual focus, aperture and shutter speed. The Olympus camera wins here, as every such option can be manual or automatic independent of each other. The Casio meets you halfway by allowing you to give priority to either shutter speed or aperture (when one is fixed, the camera will automatically adjust the other), and the PowerShot S20 provides a limited range of control over these settings (for example, shutter speed can be either "fast" or "slow").

Frustrating ergonomics

Where things get interesting is in actually using these settings. While I appreciate the increasing influence of computer technology in photography, I am always frustrated that the unnecessarily obtuse design choices that still plague some software packages have crept into digital cameras.

A good case in point is the QV-3000EX: after pressing the Mode button, the LCD screen presented me with a 3D dial with which I could select one of the eight recording modes. The icons are perplexing enough at that resolution that I didn't even notice the mode name at the top of the screen. When I did, the grouping was confusing enough that I wasn't sure of how things worked. What happens if I'm in Landscape mode and I switch to Night Scene? Does that preclude a nighttime landscape? Although only a minor speed bump on the learning curve, the distraction from the important stuff (the photo I wanted to take) rankled me just enough. I found the Canon had the best system, using predominantly text with a minimum of icons. The Olympus came a close second.

All three cameras turned in sharp, colourful images, picking up fine details in woven material and even the stubble on my seemingly clean-shaven jaw.

The QV 3000EX is also the most annoying when it comes to transferring images to a PC. The PowerShot S20 and the C 3030 Zoom both use a simple thumbnail system from which you select any or all of the images to download. The QV 3000EX Photo Loader software, however, works with your Web browser to navigate through the images.

This isn't a bad idea in and of itself. In fact, I think it's a great idea. It's just the execution that leaves a little to be desired. Photo Loader manages your images as libraries, adding an extra layer of organization and, consequently, clicking. For instance, selecting Photo Loader's View option gives you only five thumbnail images per library; you can then select the library you want to view, giving you the rest of the thumbnails. Downloading the images themselves from the browser is also counter-intuitive and tedious.

Stacked against the image quality and the breadth of features, these are minor flaws. Choosing a favourite among these cameras is difficult, as each has something to recommend it over the other. Personally, I would choose the Canon PowerShot S20 or the Casio QV-3000EX because my photos tend to be more spontaneous; I'd want to quickly change a few basic settings and fire off a couple of shots before the moment's lost. For more careful compositions, I would recommend the Olympus C-3030 Zoom, if only for the complete control you have over everything.

Another deciding factor for the undecided consumer might be the extras, but to truly delve into each camera's features would require far more space than I have here. Just detailing features like movie capturing (the Olympus and the Casio) and built-in photo-stitching utilities (the Casio and the Canon) could easily double the length of this article. Suffice it to say that each model comes with a reasonably accessible manual that should be read cover to cover to appreciate how advanced these cameras have become.

These three cameras are merely the opening salvo for the next generation of digital cameras. And while people revise their perceptions, so too will collateral devices and software need to be revised. The QV 3000EX and the PowerShot S20 can both accept IBM 170 MB or 340 MB microdrives (and presumably the 1 GB microdrives IBM recently announced), presenting a clear upgrade path for shutterbugs who don't want to manage a few dozen memory cards for extended projects. On the flip side, ThumbsPlus 4.1—my favorite image management utility—regularly choked on my directories full of 2,048x1,536 pixel photos. It looks like we'll all have some adjusting to do; after all, it's now a 3.3 megapixel world. We all just live in it. ❑

Emru Townsend (emru@[illegible]) took an awful lot of digital photos of his newborn son, [illegible].

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Compact Compaq

Continued from page 34

thumb access (Of course this assumes you're right handed Lefties can get to it with the index finger of the right hand, but it's not quite as easy) The most elegant design feature however, is the navigator button located just below the screen. It tilts in four directions for easy scrolling, can be depressed to make selections, and also doubles as the iPaq's internal speaker Very slick.

The iPaq is also a modular device with an interface at the bottom for add ons like GPS or a PC Card expansion module. These slide onto the machine, making it a bit larger overall. One module (well kind of) that comes with the iPaq is the cradle, for attaching it to the PC. The standard cradle is USB, for fast syncing, though a serial version can be ordered for an additional $43

One nice feature is the ambient light sensor which saves power by boosting and lowering the level of the backlight when needed. Now that the screens on handhelds are moving towards power hungry colour models, anything that saves power intelligently is definitely a welcome addition!

Like previous Windows CE based machines, this one offers a bunch of standard software applications to make life easier, including pocket versions of Word and Excel, Microsoft Money, and the new Microsoft Reader for reading e-books

So, with all of this going for it, why won't the iPaq win over Palm fans? Simply, Windows for Pocket PC is little more than a warmed over Windows CE, with some excellent new features but with some of the same basic problems Because Microsoft is trying to be all things to all people, the devices that use it often try to offer far too much in far too little a space Navigation on the screen becomes a problem especially when menu bars and scroll bars take up a lot of the screen real estate Despite the menu bars, there is no "X" to close the application, which makes it difficult to tell whether or not the application is still running in the background. It can be confusing especially when you're just learning the differences between this platform and the full version of Windows

These complaints aside, the iPaq is actually a nice little device, with a lot to offer Time will tell whether it's enough to take a serious run at the Palm. ❑

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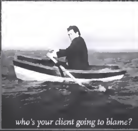

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"Blows Well Past Any Previous Machine We've Had A Chance to Benchmark"

Sean Carruthers, Computer Paper June, 2000

The Computer Paper Test Lab had some nice things to say about our Voodoo Monsoon Athlon "Classic" system. Imagine what they'll say about our new Monsoon XS systems featuring the AMD Athlon "Thunderbird" and the AMD Duron "Spitfire" processors! Either way, Monsoon XS or Monsoon you can't beat a high-end Voodoo Computer. Even the Voodoo Tsunami has had some great reviews.

This month we're going to talk about the new AMD product offerings, including the new AMD Duron "Spitfire" and the new AMD Athlon "Thunderbird". As you may know by now, AMD completely blew away the industry when they released the original Athlon "Classic" processor. This processor was absolutely "all that and a bag of chips" - and it still remains as one of the most 'silicon whooping' processors on the market.

To make a long story very short, the original AMD Athlon "Classic" had a 200MHz Front Side Bus, it supports Turbo SDRAM, which Voodoo uses in all of our Athlon Systems, and in general the math co-processor is way faster than the one on an Intel Pentium III. The main drawback to the Athlon was the point of diminishing returns. You see, as the Athlon increased in speed, the cache memory on the chip went slower and slower. So let's see, if you buy an Athlon 500 - 750 the 512k Cache would run at 50% of the CPU speed, if you buy an Athlon 800-850 the cache would run at 40% of the CPU speed, and if you buy an Athlon 900-1000 the cache would run at 30% of the CPU speed.

Get it? What the hell is cache? Cache memory is a temporary transfer memory that takes a load off of the CPU as information is processed. Essentially if your cache is slower than the CPU, your CPU does more work and you have a bottleneck.

So big deal, AMD still kicks ass when it comes to video performance, math co-processing, gaming, and a number of items - but SLOW cache on faster processors is a huge deal.

So what did they do? AMD whipped up a new series of processors that will give even the most conservative computer user a techno-woody. We're talking about the new AMD Duron "Spitfire" and the AMD Athlon "Thunderbird".

The Duron is supposed to be a 'value' processor. AMD's definition of 'value' is way too modest. In fact, our translation of AMD 'value' is "A Stupid Fast, Ultra Cheap, Celeron Ass Whooper". This processor is MEGA-FAST! They go from 600, 650 and 700MHz right now but they'll only get faster. There are too many advantages to list, some of them being: (a) 200MHz Front Side Bus (b) 192K of full speed non-mirrored cache (for a definition of non-mirrored cache, call us or check out www.voodoo.ca) (c) Priced competitive to an Intel Celeron Processor (that's right - dirt-cheap!)

The new Athlon is essentially the original Athlon on crack, speed steroids and Power Sauce Bars. The new Athlon start at 750MHz and go beyond 1 GHz. They include the following features, (a) 200MHz Front Side Bus, (b) 384K of full speed non mirrored cache, (c) Priced competitive to an Intel Pentium III Coppermine or the original AMD "Classic".

So what's the point? If you're looking at getting a new computer, consider any of the new AMD Processors. Whether you're looking at an Athlon "Classic", an Athlon "Thunderbird", or a Duron "Spitfire", you surely will not be disappointed. Make sure that you specify the following things from your dealer if you want QUALITY, HASSLE-FREE system with EXCEPTIONAL service.

Make sure your dealer is using an ASUS or Microstar Motherboard (nothing else), preferably one that takes advantage of 133MHz Turbo Ram.

Make sure your dealer is using Crucial Technologies Ram. Crucial Technologies is the best ram on the market - another reasonable brand that we have tested is Viking. Voodoo still only uses Crucial Technologies ram in all of our systems.

ABSOLUTELY make sure your dealer sells FULLY CSA Approved systems. (We're not just talking about the parts) The entire system should have a certificate from CSA stating CSA certification on the entire machine.

ABSOLUTELY make sure your dealer is ISO9002 Registered. This will only benefit you when it comes to quality control and service. Voodoo Computers is an ISO9002 registered firm, and we stand by our impressive quality control.

ABSOLUTELY make sure your dealer is an MCSP (Microsoft Certified Solution Provider). This ensures that you will have access to the highest levels of technical support available on the market today.

ABSOLUTELY make sure your dealer is using a GOOD CASE and POWER SUPPLY! If they don't know the brand of the power supply, step back. Don't buy it!

ABSOLUTELY make sure you dealer offers toll-free technical support! Voodoo does.

Check out the Voodoo website at www.voodoo.ca - We have access to loads of technical information on buying a computer. You'll also have access to The Voodoo Quote Kitchen, which allows you to completely customize your computer system, and you'll even get a one-on-one consultation online for free! You won't be disappointed!

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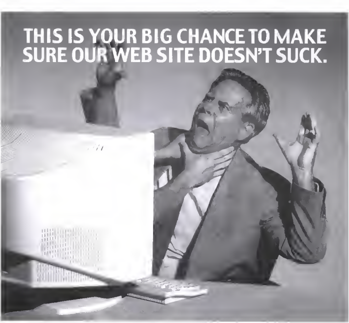
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Canadian Film Centre rolls out Great Canadian Story Engine

By Mitchell Brown

The Toronto based Canadian Film Centre has launched the Great Canadian Story Engine (http://storyengine.ca), a nationwide project that's setting out to publish the life stories of ordinary Canadians.

As the first full-scale Web initiative to be produced by Bell h@bitat, the Canadian Film Centre's new media training facility, the story engine gives Canadians a chance to tell their collective history through their own words, images and voices.

"The Great Canadian Story Engine gives Canadian content a prominent place on the Internet," said Wayne Clarkson, executive director of the Canadian Film Centre. "By sharing stories with each other, we will have an unprecedented opportunity to learn about what it is like to be Canadian."

As Bell h@bitat director Ana Serrano puts it, this is an unprecedented chance for Canadians to share their life stories—happy, sad or otherwise—with the rest of the world.

To celebrate the site's launch—and to get the word out—the Great Canadian Story Engine will be taking a three month cross-Canada road tour this summer, visiting about 30 communities.

The project's Storymobile will be stopping in such locations as the Charlottetown Festival of Lights, the Shediac Lobster Festival in New Brunswick, the Mount Tremblant Festival de Bleus in Quebec, the Museum of Civilization in Ottawa and the Edmonton Fringe Festival. While on the road, the project team will offer special training sessions to community organizations in order to provide access to individuals who are not traditional Internet users.

"The Great Canadian Story Engine project is a first for Canada and a remarkably new way of using and thinking about the Internet," said Serrano. "This program will see non-traditional Internet users come together with the online community to celebrate their everyday lives through the powerful art of storytelling."

The Canadian Film Centre's Great Canadian Story Engine was initially conceived and developed by Bell h@bitat's Rand Ardell, Jason Cliff, Rena Dempsey, Tessa Sproule and Kata Wake, and co-produced by Kate Halpenny and Serrano.

> "This program will see non-traditional Internet users come together with the online community to celebrate their everyday lives through the powerful art of storytelling."
>
> *—Ana Serrano, Bell h@bitat*

"The idea came out of the new media program at Bell h@bitat," Serrano said. "The team came up with new types of content for the Internet. This idea came out of the first session, back in 1997. About a year ago, the Film Centre felt this was the perfect idea to celebrate the new millennium, so we pitched the idea to the Millennium Bureau."

The Bureau agreed, and coughed up $500,000 to help the center develop its concept. Four months later the site was complete. Along with the Canada Millennium Partnership Program, the $1.9 million project was funded in part by a number of special partners, including the Historica Foundation of Canada, Adobe Systems Inc., Digital 4Sight, The Ontario Trillium Foundation, MacLaren McCann Interactive, the National Post, Shandwick Canada, Best Western, General Motors of Canada Limited and Graystone Graphics.

—canadacomputes.com

Flash animation enlivens Web

Continued from page 24

and maintain. But considering that most animations are one-of a kind, this may not be as important a consideration as being able to get the job done effectively.

Summary

Macromedia Flash finally has competition in the simple to fairly complex Web animation market. Adobe LiveMotion attacks on two fronts. It allows for much more adept handling and composing of bitmap with vector images (at the very real danger of file size blow up), and it simplifies the Timeline editor with the clever idea of putting every object included in a LiveMotion file onto the Timeline automatically while hiding their behaviours through an Explorer-like tree structure.

But Flash holds its own, having much better vector graphics, text, sound and movie handling capabilities. In addition, for interactivity and customization through programming, Flash cannot be matched. Just to add to the bargain, Flash 4.0 plus Freehand 9.0 are available in a Studio edition for a street price of about $600. And haven't you always wanted to say "I'll have those Web animations for you in a Flash?" ❑

Jacques Surveyer is a consultant and writer. Contact him at jsurv@inforamp.net

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Zip Drive 100MB/ 250MB int.	$85/168

Sound Cards • Speakers

Sound Card PCI Aureal	$19
Creative Ensoniq PCI-64 bit	$35
Sound Blaster PCI 128 / Live value	$44/70
Diamond Monster MX300 3D PCI	$87
Speakers SB 68/ 3D 105 with subwoofers	$35/58
Altec Lansing ACS 22/ 45 2/ 48	$39/89/109
Multimedia 4-point Surround Speaker System	$89

Monitors

AOC 17" (0.25dp) / 19" (0.26)	$279/409
Proview 17" / 19" (0.25dp)	$269/399
Samsung 15" (550S) / 17" (750S)	$189/279
MAG 15" / 17"	Call
Panasonic E70i 17" (0.27)/ S85 19" (0.25)	$319/635
Sony 110E 15" 0.25dp / E200 17" 0.24dp	$299/525
NEC 17" 0.27dp / 0.25dp	$279/385
Viewsonic E771/E773/ PF775 / E790	$315/375/485/609
Optiquest Q51 / 0/1 / Q95	$215/319/509

Notebooks

Toshiba

4260x P-II 450/64M/12G/14.1"TFT DVD	$3760
4270x Cel 500/64M/6G/14.1"TFT DVD	$3119
4300x PIII600/64M/12G/14.1"TFT DVD/Win2K	$4119
Acer 508T Cel 500/64M/4.3G/24X/12.1"	$2069

Networking products also available.
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Video Cards

S3 4MB / 8MB PCI	$35/47
ATI Rage IIC 4M / 8M AGP	$43/49
ATI Xpert 98 Rage Pro / 99 Rage 128 AGP 8M	$55/69
ATI Xpert 128 AGP 16MB AGP	$109
ATI Xpert @Play AGP 8M	$69
ATI Xpert 2000 AGP 2X / Pro 32MB	$116/139
ATI Rage Fury / Pro / MAXX 32MB	$155/165/240
Nvidia TNT2 Vanta 16M M64 / 32M	$79/99
Nvidia TNT2 Rage 128 Pro 32M	$130
Matrox G400 16M / 32M AGP	$149/189
Graphics Blaster Riva TNT2 Value 32M	$159
Asus V6600 GeForce 256 Deluxe 32M	$299
Asus V6800 DDR Deluxe GeForce 256	$435
Asus GeForce 256 Pure 64M	$265
Asus GeForce 256 DDR Pure 64M	$405
Asus V7700 GTS 32/ 64MB DDR Pure	$435/585
Creative RIVA TNT2 Pro128 32M, AGP	$205
Creative Labs 3D GeForce 32M DDR	$379
Logitech Digital Camera / Sharp PC Camera	$85/Call
ATI TV Wonder PCI	$85

Scanners • Printers

AcerScan 620P / 620UT / 640U	$129/160/135
Brother / Samsung Laser Printer	Call
BJC 2100 USB & Parallel Printer	$119
Epson 440 / 660 / 740 Printer	$150/189/218
Lexmark Z11 / Z31 / Z51 Printer	$98/175/239
HP 840C / 930C / 1100 Printer	$235/309/565

Fax Modems

56k V.90 PCI win with voice/hardware control	$25/48
USR 56k Int. V.90 voice / without voice	$49/55
Acer 56k with dual standard PCI / ISA	$46/67

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Elite System

AMD **K6II** 550MHz CPU
Super 7 Motherboard
64MB PC100 RAM
Fujitsu 10GB Hard Drive
Panasonic Floppy Drive
8M 3D Video Integrated
56K FaxModem Ins. Internal
Delta 48x CD ROM Drive
PCI 3D Audio on board
140W Stereo speakers
Alpha 15" Tower Case
98 Keyboard & Mouse

$549.00

Celeron System

Intel **Celeron 533** CPU
SIS 620 Motherboard
64MB(PC100) SD RAM
Fujitsu 10.2GB Hard Drive
Panasonic Floppy Drive
8M 3D Video on board
56K FaxModem Ins. Internal
Delta 48x CD ROM Drive
PCI 3D Audio on board
140W Stereo speakers
Alpha 15" ATX Tower Case
Win98 Keyboard & Mouse

$599.00

Power WorkStation

Intel **Pentium III** 667MHz
Gigabyte PC133 Motherboard
64MB PC133 SD RAM
Fujitsu 20G ATA66 Hard Drive
Panasonic Floppy Drive
ATI Xpert 98 Video 8M 3D
Motorola 56k FaxModem free internet
Creative 52x CD ROM Drive
Crystal 3D Audio
140W Stereo Speakers
Alpha 16" ATX Tower Case 250W
98 Keyboard & Scroll Mouse

$879.00

Athlon System

AMD Athlon K7 800 CPU
Asus K7V(PC133) Motherboard
128MB PC133 RAM
Maxtor 20GB 7200 Hard drive
Panasonic 1.44MB Floppy Drive
ATI Xpert 2000 Video 32M
USR 56k FaxModem free internet
Creative 52x CD ROM Drive
AC'97 Audio
200W Stereo Speakers
Alpha 19" ATX Case 300W
98 Keyboard & Scroll Mouse

$1369.00

Professional Station

Intel Pentium III 800 MHz
Asus P3V-4X Motherboard
Fast 128MB (PC133) RAM
Maxtor20GB 7200 hard drive
Panasonic 1.44MB Floppy Drive
ATI Fury Pro 32M TV in & out
USR 56K FaxModem free internet
Creative 52x CD ROM Drive
SB Live Value
CNT 5000 Speakers sub-woofer
Alpha 17" ATX Case 250W
98 Keyboard & Scroll Mouse

$1489.00

Alpha Net Server

Intel Pentium III 700MHz CPU
Intel L440GX MB Dual U2W SCSI
Dual CPU capable
128MB Memory. 2GB max
Fujitsu SCSI [illegible] hard drive [illegible]
Panasonic 1.44MB Floppy Drive
2MB video on board
Toshiba SCSI CD ROM 40x
Intel EtherExpress Pro on board
NetServer Case ATX 300W
hot swap capable
Win98 Keyboard & Mouse

$2199.00

System Options (with System purchase only)

15" IBM G54 monitor 0.28dp	*$182*
17" Impression monitor [illegible]dp	*255*
19" Pr[illegible] 1.26dp	*394*
Panasonic 8x4x32 CDRW (drive only)	*$245*
Epson Stylus 440 Printer	*109*
Artec Scanner 36bits 600x1200 (parallel)	*79*
NV100 Web Camera	*49*

System Upgrade Options. Add

64M >128MB RAM PC100	*95*
64M >256MB RAM PC100	*303*
128M >256MB RAM PC133	*209*
10.2 >15GB Fujitsu hard drive	*79*
15 >10GB Fujitsu 1400 hard drive	*28*
20 >30G Maxtor 7200rpm hard drive	*60*

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HARD DRIVES & Controllers

Fujitsu 6.4/10.2/15/17/20G	115/119/139/149/149
Maxtor 15/20/30/40G	139/149/249/359
Maxtor 15/20/30/40G 7200rpm	195/229/289/3[illegible]
Quantum 13/17/20G	195/2[illegible]/229
Quantum 7200rpm 10/15/20G	149/179/239
W.D. 15/20/30/45G	159/175/249/319
W.D. [illegible] 7200rpm	[illegible]
SCSI Quantum 9/18G 7200rpm	319/519
SCSI Quantum 9/18/36G 10K	499/759/1279
SCSI Fujitsu U2W 9.1/18.2G	299/439
SCSI Fujitsu 10K 9.1/18.2/36G	459/819/1199
SCSI W.D. Ultra 160 10K	449
HD mobile rack plastik/steel/SCSI	15/23/29

Inkjet Printers

Canon BJC50/85	475/385
Canon BJC 80/85E	99
Canon BJC 2100/3000(after $50 rebt)	99/189
Canon BJC5100 11 x17	179
Canon BJC6100 (after $30 rebt)	259
Epson 440/660/670	107/129/129
Epson 740/760/860/900 after rebate	139/175/199/399
Lexmark 3200/5770	129/379
Lexmark Z11/Z31/Z31/Z32	95/95/139/189
Lexmark Z51/Z52	235/279
Printer Adaptor	25

Laser Printers

Brother HL1030 [illegible]	369
Brother HL1240/1660E/2060	459/1179/1499
HP LaserJet 1100	559
Samsung 5100A/6050(after $50 Rebt)	189/379
Samsung 7000	899

Scanner

Acer 6XI USB (after U.S.$20 Rebt)	99
Artec 600x1200dpi	79
Slimkit SR 600x1200dpi	89
Canon N670U/676U (after $30 rebate)	100/149
Epson 610/Perfection photo 1200U	209/435

CASES

15"/19" Tower Case w/230w	29/39
16"/18"/19" ATX Tower w/250w	38/46/48
19"/24" ATX Tower w/300w	59/79
Power Supply 230/250/300W	25/29/65
Hot swappable Power Supply 400Wx2	435

CPU

Intel MMX 233/Cyrix MX300	72/43
Intel PIII500/533B/533EB	249/349/299
Intel PIII 550E/550/600B	308/269/329
Intel PIII 600E/600EB/650/667	329/[illegible]/365/419
Intel PIII 700/733/750/800/866	[illegible]
Celeron 500/533/566/600	139/159/169/189
AMD [illegible]	[illegible]
AMD Duron 600/650/700	135/169/239
AMD K7 600/650/700/750	245/255/268/319
AMD K7 800/850/900/1G	[illegible]/528/719/1159

MEMORY

EDO 72pin 16/32M	69/108
SDRAM PC100 32/64/128/256M	58/98/199/429
SDRAM PC133 64/128/256M	68/115/209/439

MOTHERBOARDS

SIS Super 7 Motherboard w/video sound	105
Intel 810 w/video sound for celeron	89
SIS630 PIII133 w/video sound modem ATX	115
Matsonic AMD K7 M/B w/sound,modem,lan	169
Abit BE6/VA6/SE6/VH6	159/149/239/165
Abit KA7/KA7 100/BP6	229/249/179
Gigabyte 6VXE/6VX-4x/6VX7	109/135/109
Gigabyte Athlon GA7	195
ASUS P2-99/P3B F/CUSL2	145/185/239
ASUS P3V/p3v 4X/CUV4x	135/165/165
ASUS P5A Super 7 AT/ATX	119/125
ASUS Athlon K7M/K7V	205/235
Acer AX6B/6/Pro	115/139
Micro-Star K7Pro 6195	99
MicroStar Super 7 5169	109

Zip/Floppy DRIVE

1.44MB Floppy Drive	17
Zip Drive 100MB	75

NETWORKING

3 COM 905B PCI 10/100TX	69
D-Link 538TX PCI	15
Accton/Surecom Ethernet (PCI or ISA)	16/14
Accton/Surecom Ethernet PCI 10/100 BaseT	19/17
Soho PCMCIA Networkcard 10or10/100	49/83
10M Hub Accton 5 ports	29
10M Hub 8 ports Acer/Accton	45/45
100M Hub Soho 4 ports	45
10/100 Dual Speed Hub Soho 5 ports	90
10/100 Dual Speed Hub Acer 8 Port	128
Ethernet RG58/RJ45 [illegible]	[illegible] 19
Fiber [illegible]	99

MONITORS

15" Samsung LCD Panel 5705	1299
15" Viewsonic LCD VE/VP150	1329/1479
15" Acuma/Proview/Acura/Samtron 0.28	179
15" IBM G54 0.28	185
15" Sceptre Dragon D50X w/speakers	199
15" Sony 110GS /Mag 570FD 0.25dp	305/269
15" Viewsonic Optiquest Q51/Q55	209/219
17" Acuma/KDS/Impression 0.27dp	**255**
17" Mag 786FD 0.24dp	429
17" AOC 7Glr 0.25dp	269
17" Acerview G772/Proview 0.25dp	315/269
17" GoldStar Flatron 0.24 775FT/795FT	385/418
17" NEC FE700/A570	399/299
17" PanaSync E70s/PL70/SL75	319/470/339
17" Samsung 700NF(Flat)/7 10GF(after 50reb)	379/319
17" Sony E200/G200	509/559
17" Optiquest Q71/Q75	299/399
17" Viewsonic E771/E773/G773	319/329/389
17" Viewsonic EF70/PS775/PF775	385/450/469
19" GoldStar 995E	489
19" Proview 0.25dp/Samtron 0.26dp	399/429
19" Viewsonic G5790/PF790/Q95	590/669/489
19" Sony G400/E400 .25dp	839/739
19" Samsung 900NF(Flat) 0.25dp (after 50Reb)	598
21" Viewsonic Optiquest Q115 0.25dp	979

VIDEO

Logitech QuickCam Express/NV300 VideoCam	69/49
SIS PCI 4M / ATI PCI 4M	39/49
SIS AGP 8M/16M TV out	43/52
Asus V6600 Geforce 32M/Deluxe/Pro64	259/299/275
Asus V7700 Geforce 32M/64M	445/589
Asus V6800 Geforce 32M Pure/Deluxe	289/349
ATI TV Wonder	95
ATI AGP All in wonder 128 16/32M	215/289
ATI AGP All in wonder 128 Pro 4x 32M	344
ATI AGP XPERT98/Xpert 98 8M	53/85
ATI AGP Xpert 128 16M/2000 32M	109/115
ATI AGP Fury 32M/FuryPro/MAXX 64M	159/165/245
Creative GeForce 256 Annihilator Pro	389
Matrox G400 16M/32M	139/189
Matrox G400 32M Dual 300/360 MHz	219/285
Nvidia TNT2 32M/32MTV	105/119
PowerColor Geforce 32M w/TV	309
S3 Savage4 AGP 16M/16MTV/32M	69/79/109
[illegible]	[illegible]

CD-ROM

Acer 52x/48x/40x	58/54/49
Creative52x/Asus 50x/40x	[illegible]/68/63
Delta 48x/IBM 32x	52/42
SCSI Toshiba 40x	119
CDRW Goldstar LG 4432	229
CDRW 8432 Panasonic/Acer	259/259
CDRW 8432 Plextor/Creative/Sony	329/260/289
CDRW Yamaha 6424/8824	329/365
CDRW HP 8250/9310	265/385
CDRW Sony 10x4x32	369
External CDRW Sony 4x2x6/HP446	349/349
SCSI CDRW Yamaha 8432	360
DVD/CDRW Combo Memorex	**359**
DVD III Pioneer 10x	209
DVD III Sony/Panasonic 6x	159
DVD III SCSI Pioneer 6x	195
Tekram 310 SCSI Adaptor	54

Multimedia

Yobai 3D sound card/Acer AW37	15/17
Aopen AW744 Optical Fiber 4 Channel	47
A Sound 3D PCI sound card	17
Aureal Vertex 1/SuperQuad	28/65
Sound Blaster Live/PCI128/Live Value	121/44/58
Speakers 120w/300w Subwoofer	9/40
Speakers Flat Panel w/Subwoofer 600W	42
Speakers Altec Lancing ACS45.1/ACS54	82/95
Speakers Creative Cambridge/GNT 5000	119/53
Mic [illegible]/Headphone w/mic	8/18

FAX/MODEMS

Motorola 56K V.90 Data/Fax Voice	**23**
Acer 56K V.90 Voice PCI/ISA	37/56
Diamond Supra 56K V.90 Voice	45
USR 56K V.90 PCI	49
USR 56K Hardware modem PCI/ISA	75/89
External FaxModem 56K	89

Keyboard/Mouse

Win95 / Fujitsu/IBM Keyboard	11/18/27
3 button Mouse Serial/PS2/USB	6/6/15
Genius/WHN Scroll Mouse	12/14
Logitech 2 Button/scroll Mouse	9/17
PS2 mouse(transparent)/Trackball	8/26
A4 Finger/Wireless Mouse	29/29

Misc

USB 4 Port Hub/USB Adaptor	10/20
External CD/Hard Drive box parallel	99
CDR/CDRW 10 pieces	15/25
Zip [illegible] 100MB [illegible]	12.9/189

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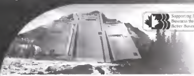

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$376.00

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$179.00

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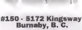

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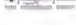

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Mother board

ABIT BE6 P-II Motherboard ATX	$100.00
ABIT BF6 P-II Motherboard ATX (1AGP 6PCI 1ISA)	$100.00
ABIT KA7 Athlon Motherboard ATX	[illegible]
ABIT VA6 VIA Lite 1 Motherboard ATX$118.00	$118.00
ABIT VT6X4 Pentium III/Cel VIA Motherboard w/Audio ATX	$105.00
ASUS CUBX COP/370 Motherboard ATX	$195.00
ASUS CUV4X-A FCPGA Motherboard ATX	$140.00
ASUS CUV4X-M FCPGA Motherboard ATX AC97 Sound	$100.00
ASUS K7M AMD K7 Athlon Slot A Motherboard No/Audio ATX	$209.00
ASUS K7V AMD K7 Athlon Slot A Motherboard Yamaha Audio ATX	$229.00
ASUS P2B-D Dual Pentium-II Motherboard ATX	$386.00
ASUS P2B-1394 440BX PC100 FBB SP/SISA/AGP	$389.00
ASUS P2B-F Pentium II Motherboard ATX(BP)	$179.00
ASUS P3V-4X Pentium II & III PC133 Motherboard ATX	$159.00
ASUS P5A Super 7 PC100 Motherboard ATX	$120.00
ASUS P5A-A Super 7 PC100 Motherboard w/SB16 ATX	$105.00
ASUS P5A-B Socket 7 Motherboard AT	$120.00
GIGABYTE GA-6BX7 Socket 370 Motherboard ATX	$146.00
GIGABYTE GA-6BXC P-II Motherboard ATX	$105.00
GIGABYTE GA-6BXD P-II Motherboard ATX	$292.00
GIGABYTE GA-6VX-4X P-II Motherboard ATX	$100.00
GIGABYTE GA-6VX7 1394 S370 Motherboard ATX	$186.00
GIGABYTE GA-6VX7-4X PPGA/FCPGA/EPGA Motherboard ATX	$136.00
GIGABYTE GA-6VXE+ P-II Slot1 Motherboard ATX	$105.00
GIGABYTE GA-7IXE AMD K7 Slot A Motherboard ATX	$169.00
GIGABYTE GA-7ZM AMD K7 Athlon/Duron Motherboard ATX	$186.00
GIGABYTE GA-BX2000+ PII & III Dual BIOS Motherboard ATX	$139.00

Video Card

3Dfx Voodoo3 2000 16MB AGP Video Card (OEM)	$100.00
3Dfx Voodoo3 3000 16MB AGP Video Card (OEM)	$169.00
3Dfx Voodoo3 3500 16MB AGP Video Card w/TV Tuner (OEM)	[illegible]
3Dfx Voodoo5 5500 64MB AGP Video Card	$419.00
ASUS 32MB V6600 DDR GeForce256 AGP Video Card TV	$294.00
ASUS 32MB V6800 DDR GeForce256 AGP Video Card w/o TV	$290.00
ASUS 32MB V7700 DDR GeForce II AGP Video Card w/o TV	$429.00
ASUS 64MB V7700 DDR GeForce II AGP Video Card w/o TV	$509.00
ATI 16MB All In Wonder 128 AGP Video Card	$218.00
ATI 32MB All In Wonder 128 AGP Video Card(OEM)	$276.00
ATI 32MB Fury Rage128 PRO AGPx4 Video Card w/o TV in/out OEM	$148.00
ATI 32MB Fury Rage128 PRO AGPx4 Video Card w/TV In/Out OEM	$151.00
ATI 32MB SRAM Xpert2000 AGP Video Card	$118.00
ATI 64MB Fury Max AGP4X Video Card	$338.00
ATI 8MB SRAM Xpert98 AGP Video Card	$49.00
ATI 8MB SRAM Xpert98 Work PCI Video Card	$69.00
ATI 8MB SRAM Xpert98 AGP Video Card	$65.00
Creative 32MB Annihilator2 GeForce2 GTS AGPx4	[illegible]
Diamond 16MB Stealth III S540 AGP Video Card	$98.00
Matrox 32MB Millennium G400 Dual Head Video Card	$218.00
Matrox 32MB Millennium G400 MAX Dual Head Video Card	$279.00
Matrox 32MB Millennium G400 SingHead Head Video Card	$179.00
Oxygen 32MB VX1 AGP Video Card Retail	$266.00
Pine SIS 3D 8MB AGP Video Card	$46.00
S3 Savage4 32MB AGP Video Card	$80.00
SNIPER2 32M NVIDIA RIVA TNT2 M64 4X/2X A/18	$136.00

Monitor

Acer 17" [illegible] SVGA Color Monitor	$279.00
Acer 17" G772 SVGA Color Monitor	$319.00
Acer 19" V95L SVGA Color Monitor	[illegible]
AOC 15" SVGA Digital Color Monitor	$178.00
AOC 17" 0.25dp SVGA Digital Color Monitor	$288.00
AOC 17" 0.27dp SVGA Digital Color Monitor	$249.00
AOC 19" 0.26dp SVGA Digital Color Monitor	$366.00
Hansol 17" 710D 1600x1280 0.25 SVGA Color Monitor	[illegible]
Hansol 17" 710P 1600x1280 0.25 SVGA Color Monitor	[illegible]
Hansol 19" 900P 0.26 SVGA Color Monitor	$489.00
IBM 15" G54 SVGA Color Monitor	$179.00
IMAGO 17" 0.27dp SVGA Digital Color Monitor	$246.00
IMAGO 19" SVGA Digital Color Monitor	$390.00
MAG 17" 786PD SVGA Color Monitor	$449.00
MAG 17" 796FD SVGA Color Monitor	[illegible]
MAG 17" XJ700 SVGA Color Monitor	$416.00
MAG 19" 110FD SVGA Color Monitor	$730.00
MAG 19" XJ810 SVGA Color Monitor	$618.00
MAG 21" XJ311 SVGA Color Monitor	$1,148.00
NEC 17" A570 SVGA Color Monitor	$275.00
NEC 17" FE700 SVGA Color Monitor	$376.00
NEC 17" FE750 SVGA Color Monitor	$466.00
NEC 19" FE950 SVGA Color Monitor	[illegible]
NEC 22" FP1350 SVGA Color Monitor	$1,391.00
Optiquest 17" Q71 SVGA Color Monitor .27	[illegible]
Optiquest 17" V73 SVGA Color Monitor .28	$448.00
Optiquest 17" V75 SVGA Color Monitor .26	[illegible]
Optiquest 19" Q95 SVGA Color Monitor .27	[illegible]
Panasonic 21" S110 SVGA Color Monitor	$1,178.00
Pioneer [illegible] SVGA Color Monitor 0.26dpi	[illegible]
SONY 15" E100 SVGA Color Monitor	$294.00
SONY 17" E200 SVGA Color Monitor	$518.00
SONY 17" G200 SVGA Color Monitor	$579.00
SONY 19" E400 SVGA Color Monitor	$731.00
SONY 19" G400 SVGA Color Monitor	$828.00
SONY 21" E500 SVGA Color Monitor	$1,418.00
SONY 21" G500 SVGA Color Monitor	$1,521.00
Viewsonic 17" E771 SVGA Color Monitor	[illegible]
Viewsonic 17" EF70 SVGA Color monitor .26mm	[illegible]
Viewsonic 17" GF775 SVGA Color Monitor .24dp	[illegible]
Viewsonic 17" GS773 SVGA Color Monitor	$458.00
Viewsonic 19" PF790 SVGA Color Monitor	[illegible]
Viewsonic 21" P810 SVGA Color Monitor	$1,118.00
Viewsonic 21" P815 SVGA Color Monitor	$1,248.00
Viewsonic 21" PF815 SVGA Color Monitor	[illegible]

Keyboard

Fujitsu 8725 P/S2 Keyboard	$60.00
Fujitsu 8725 Win95 P/S2 Keyboard	$18.00
Logitech Cordless Touch P/S2 Keyboard w/Mouse & Pad	$118.00
Logitech Cordless Pro Touch P/S2 Keyboard w/MousePad	$158.00
Logitech Deluxe P/S2 Keyboard	[illegible]
Logitech Deluxe P/S2 Keyboard New Touch Style	$60.00
Logitech Internet P/S2 Keyboard	$35.00
MS Internet P/S2 Keyboard	$29.00
MS Internet Pro P/S2 Keyboard	$56.00
MS Natural Elite Keyboard P/S2	$35.00

Mouse

Logitech Cordless Wheel MouseMan	$76.00
Logitech Cordless Wheel Mouse	[illegible]
Logitech Wheel USB Combo MouseMan	$40.00
Logitech Trackman Mouse Wheel USB Mouse	$76.00
MS Optical Intellimouse Explorer Mouse PS/2 USB (Silver) OEM	$76.00
MS Optical Intellimouse Wheel Mouse P/S2	$66.00
MS Trackball Wheel Mouse P/S2	[illegible]
Wacom 4x5 ArtPad Serial for PC	$116.00
Wacom Graphire Tablet 4"x5" USB	$126.00
Wacom Intuos Drawing Tablet 6x8	$448.00
Wacom Intuos Drawing Tablet 9x12	$619.00

CD ROM Drive

[illegible] DMA IDE CD ROM Drive	$60.00
[illegible] IDE CD ROM Drive	[illegible]
[illegible] IDE CD-ROM DRIVE	[illegible]
[illegible] Int. Ultra SCSI CD ROM Drive	$178.00
[illegible] SCSI CD ROM Drive	$125.00
[illegible] 44x IDE CD ROM Drive	$66.00

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[illegible] IDE DVD Drive	$108.00
Aopen [illegible] Int. IDE DVD Drive	$148.00
ASUS [illegible] Int. IDE DVD-ROM Drive	$178.00
Creative Encore DVD Drive DXR3 Edition	[illegible]
L.G Electronics 8X DVD Int. IDE Drive	$159.00
Panasonic 8X IDE DVD Drive	$169.00
Pioneer 16X DVD Int. IDE Drive	$179.00
Samsung 8X DVD Drive	$148.00
Toshiba 12X DVD Int. IDE Drive	$198.00

Hard Drive

[illegible] IDE ATA66 5400/7200rpm Hard Drive	$125/$180.00
[illegible] IDE ATA66 5400/7200rpm Hard Drive	[illegible]
Fujitsu [illegible] ATA66 5400rpm/8.5ms/512k Hard Drive	$118.00
Maxtor [illegible] IDE ATA66 5400/7200rpm Hard Drive	$120/$140.00
Maxtor 15GB IDE ATA66 7200RPM/9ms/2MB Hard Drive	$168.00
Maxtor 20.4GB IDE ATA66 5400/7200rpm Hard Drive	$180/$200.00
Maxtor 30GB IDE ATA66 5400/7200rpm Hard Drive	[illegible]
Maxtor 40.9GB IDE ATA66 7200RPM/9ms/2MB Hard Drive	$350.00
Quantum 10.2GB FB+ LM ATA-66 7200rpm/8.5ms/2MB Hard Drive	$160.00
Quantum 15GB FB+ LM ATA 66 7200 8.5ms 512K Hard Drive	$170.00
Quantum 20.5GB FB+ LM ATA-66 7200rpm/8.5ms/2MB Hard Drive	$200.00
Quantum 30GB FB+ LM ATA 66 7200rpm/8.5ms/2MB Hard Drive	$279.00
WD 10.0GB IDE ATA66 5400/7200rpm Hard Drive	$138/$160.00
WD 15.0GB IDE ATA66 5400/7200rpm Hard Drive	$154/$180.00
WD 20.5GB IDE ATA66 5400/7200rpm Hard Drive	$179/$220.00
WD 30.7GB IDE ATA66 5400rpm/9.5ms/2MB Hard Drive	[illegible]
WD 8.4GB IDE ATA66 5400rpm/9.5ms/2MB Hard Drive	$139.00

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Fujitsu [illegible] 68pin U2W 7200rpm/10ms/2MB Hard Drive	$668.00
Fujitsu [illegible] 68pin U2W 7200rpm/10ms/256K Hard Drive	$348.00
IBM [illegible] DKRF [illegible] 4ms/2MB Ultra 160 SCSI Hard Drive	$675.00
IBM [illegible] ULTRA2 SCSI Hard Drive	$380.00
Quantum 18.2GB Atlas UW SCSI Hard Drive	$588.00
Quantum 18.2GB Atlas V Ultra 160 7200/6.3ms/4MB Hard Drive	$486.00
Quantum 36.4GB Atlas IV 10k/5ms/2MB Ultra160 SCSI Hard Drive	$1,3[illegible]
Quantum 9.1GB Atlas 7200rpm/6.3ms/4MB U2/160 SCSI Hard Drive	[illegible]
Quantum 9.1GB Atlas 7200rpm/6.3ms/2MB UW SCSI Hard Drive	[illegible]
Seagate 18GB Cheetah U2W SCSI Hard Drive	$925.00
Seagate 50.0GB U2W SCSI Hard Drive	$1,480.00
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WD 18.0GB SCSI 68pin U2W 10Krpm/2MB Hard Drive	$709.00
WD 18.3GB SCSI 80pin U2 SCA2 10Krpm/7.8ms/8MB Hard Drive	$719.00
WD 18.3GB SCSI 68pin U2W 10Krpm/2MB Hard Drive	$719.00
WD 9.1GB SCSI 80pin U2W 10Krpm/2MB Hard Drive	$400.00
WD 9.1GB SCSI 68pin U2W 10Krpm/2MB Hard Drive	$400.00
WD 9.1GB SCSI 68pin U2W 7200rpm/8ms/2MB Hard Drive	$310.00

CD Write

ACER [illegible] 4x4x32 Retail IDE CD Writer	$256.00
Creative [illegible] 8x4x32 Int. IDE CD-RW Drive	$268.00
HP 8250 4x4x24 IDE Int. CD-ReWriter Drive	$259.00
HP 8210 8x4x32 SCSI Int. CD-ReWrite Drive	$375.00
HP [illegible] 10x4x32 IDE Int. CD ReWrite Drive	[illegible]
LG 4x4x32 IDE Int. CD-ReWrite Drive	$185.00
Panasonic CW7585 8x4x32 CD-ReWrite Drive	[illegible]
Plextor 8x4x32 Int. IDE CD Writer	$328.00
SONY 10X4X32 CDRW Int. EIDE Bare Drive	$300.00
SONY 8X4X32 CDRW Int. EIDE Bare Drive	$280.00
Yamaha CRW8424 E-IDE Int 8X/4X/24 CDRW	[illegible]
Yamaha CRW8424 E-IDE Int 8X/4X/24 CDRW	[illegible]
Yamaha CRW6424S Int. SCSI CDRW	$448.00

Case & P/S

[illegible] Jerry A5651 ATX Case w/o Power Supply	$205.00
Power Supply 300W Redundant ATX	$386.00
RackMount 2U TP2062 Case w/o Power Supply	$458.00
RackMount 4U TP4062 Case w/o Power Supply	$396.00
RackMount 4U TP8864 Case w/o Power Supply	$238.00

Sound Card

SoundBlaster Ensoniq PCI Sound Card	$35.00
SoundBlaster Live MP3+ Sound Card Retail	$140.00
SoundBlaster Live Platinum Sound Card (Retail)	$266.00
SoundBlaster Live Sound Card K-GAME(Retail)	$100.00
SoundBlaster Live Value Sound Card	$48.00
SoundBlaster PCI 128 Sound Card	$48.00

Tape Drive

[illegible] 6E Tap Backup Drive	$180.00
HP 7GB (Comp to 14GB) Travan Int IDE Tap Backup Drive	$328.00
HP Surestore DAT 40 Tape Drive	$1,509.00
IBM DLT 40-80GB Int SCSI Tap BackUP	$8,800.00
IBM DLT DDS-3 Tape Drive Back UP Unit	$1,079.00
On Stream 30GB INT IDE Back UP Drive	$308.00

GRANITE SYSTEM

Intel Celeron 500MHz PPGA CPU & Fan
Elite P6SET ML SIS620 Slot 1/Socket
370 Motherboard ATX
32MB PC100 SDRAM
Panasonic 1.44MB 3 1/2" Floppy Drive
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8MB SIS630 Chipset AGP Video (On-Board)
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Logitech 2 Button P/S2 Mouse
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16Bit 3D Integrated Sound w/ Wavetable
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120W Stereo Amp w/AC Adapter Speakers
One Month Internet Free
Full warranty

15" SVGA Color Monitor **$176** Special price with this system

$569

RUBY SYSTEM

AMD K7 Duron 600MHz CPU & Fan
GIGABYTE GA 7ZM AMD Duron Motherboard ATX
64MB PC133 SDRAM
Panasonic 1.44MB 3 1/2" Floppy Drive
10.8GB IDE ATA66 5400rpm Hard Drive
S3 Savage4 32MB AGP Video Card
18" ATX Tower Case/250W Power Supply
104 Win98 P/S2 Keyboard
Logitech 2 Button P/S2 Mouse
ACER 56K V.90 Int. PCI Real Voice/Fax Modem Card
SoundBlaster Ensoniq PCI Sound Card
Creative Labs 52x IDE CD ROM Drive
Juster 3D FX1 450 Watt w/Subwoofer Speakers
PCWorks 2000 Plus Software Bundle
One Month Internet Free
Full warranty

17" AOC SVGA Color Monitor **$246** Special price with this system

$936

ROCK SERVER #1

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Intel T440BX SCSI U2W Server Motherboard
128MB 168pin PC100 ECC SDRAM
Panasonic 1.44MB 3 1/2" Floppy Drive
Integreded Single-channel ultra-SCSI Controller
Quantum 9.1GB Atlas 7200rpm/6.9ms/2MB U2W SCSI Hard Drive
Integreded Intel 2MB SGRAM PCI Video
Net Server A9881 ATX Case w/300W Power Supply
Toshiba 40x SCSI CD ROM Drive
Integraded Intel EtherExpress Pro/100+ On-Board Networking Lan
One Month Internet Free
Full warranty

$1,998

EMERALD SYSTEM

Intel Pentium III 667MHz CPU & Fan
GIGABYTE GA-6VX-4X Pentium III Motherboard ATX
64MB PC133 SDRAM
Panasonic 1.44MB 3 1/2" Floppy Drive
20.0GB IDE-ATA33 7200RPM Hard Drive
ATI 32MB Fury Rage128 PRO AGPx4 Video Card
18" ATX Tower Case/250W Power Supply
104 Win98 P/S2 Keyboard
Logitech 2 Button P/S2 Mouse
ACER 56K V.90 Int. PCI Real Voice/Fax Modem Card
SoundBlaster PCI 128 Sound Card
Creative Labs 52x IDE CD ROM Drive
Juster 3D-105 Subwoofer / 3D Sound Speakers
PCWorks 2000 Plus Software Bundle
One Month Internet Free
Full warranty

17" NEC AS70 SVGA Color Monitor **$266** Special price with this system

$1,268

DIAMOND SYSTEM

AMD K7 Athlon 700MHz CPU & Fan
ABIT KA7 Athlon Motherboard ATX
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Panasonic 1.44MB 3 1/2" Floppy Drive
30GB IDE-ATA66 7200RPM Hard Drive
ASUS 32MB DDR V6800 Pure AGP Video Card
17" ATX A500 Tower Case/235W Power Supply
MS Internet P/S2 Keyboard
MS Intellimouse P/S2 Wheel Mouse
ACER 56K V.90 Int. PCI Real Voice/Fax Modem Card
SoundBlaster Live Value Sound Card
Altec Lansing ACS54w Speakers
Creative Labs 8x4x32 Int. IDE CD-RW Drive
PC Works 2000 Plus Sfotware Bundle
One Month Internet Free
Full Warranty

19" IMAGO SVGA Color Monitor **$386** Special price with this system

$1,795

ROCK SERVER #2

Dual Intel Pentium III 667MHz CPU Retail$3,888.00
SuperMicro P3DM3 i840 Dual CPU Motherbard ATX
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Panasonic 1.44MB 3 1/2" Floppy Drive
Adaptec AIC-7892 Ultra 160 SCSI On-Board Controller
Quantum 18.4GB Altas 10k/5ms/2MB Ultra160 SCSI Hard Drive
Intel 2MB SGRAM PCI Integrade Video
Net Server A9891 ATX Tower Case
Power Supply 300W Redundant ATX
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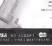

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Monitors (crt&digital)
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Accessories & cases
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Modem devices
[illegible]

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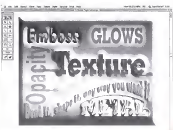
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METAL

Special text effects

Continued from page 34

logue boxes by double clicking on text or background objects.

With dozens of pull down menu text descriptions Typestyler's developers have recognized that a picture is more effective when it comes to conveying the "look" of an effect A nice user interface touch that enhances clarity is the use of hierarchical side menus to display static/dynamic previews of the menu text descriptions

Like many other graphic applications, Typestyler has wisely added features that address the requirements of Web page designers. For example the Web pull down menu has 15 pre-defined Javascript roll-over effects that you can tweak by editing your type attributes In addition it has more than a dozen canned animated GIF effects and the ability to rapidly build slide shows and banner ads You can even go as far as exporting your entire Typestyler document as a Web page Once you have finished assembling your combination of effects you can preview them by launching your preferred browser from within Typestyler

Print publishers should be pleased that Typestyler has extensive control over printing colour separations There are options for converting spot colours to process and for manipulating the screen angles and frequency for each plate

While the special type effects are dazzling the developers haven't skimped on sophisticated type controls. Professional publishers will be happy to know that Typestyler offers fine control over word and pair kerning as well as letter, word and line spacing. The program also goes to great lengths to save you time with a handy set of predefined functions listed under the Special menu. For example, Typestyler allows you to randomly shuffle the baselines of individual letters, or rotate them about their centres for a "jumbled" look.

Typestyler supports the usual raft of file formats so you can bring in files, or conversely share Typestyler work with other applications The import and export commands contain translators for Photoshop, Illustrator EPS, TIFF, PICT, JPEG and GIF file formats The program also supports drag and-drop between windows of other graphic applications from Adobe, Macromedia and Quark.

As far as type engine compatibility goes, both Adobe Postscript Type 1 and TrueType fonts will work with Typestyler If you are using Type 1 fonts, make sure you have Adobe Type Manager 4 0 or higher As a bonus the Typestyler CD ROM contains over 110 Bitstream fonts ideally suited for display purposes

Typestyler's impressive ability to create complex type special effects doesn't come at the expense of ease-of learning, or ease-of use If you are familiar with Photoshop, Illustrator, or Freehand, you will almost certainly feel comfortable with its small assortment of tools since just about all of them are identical in appearance and function The only tool unique to Typestyler is the Shaper which reveals bezier curve handles used to modify the envelope shape of distorted text Typestyler's assorted combination of numerous predefined effects, and flexible editing controls, make it simple to create stunning text and backgrounds that are impossible or very difficult, to create in other graphic applications.

Although Typestyler developers have put a lot of effort into making the program simple to master, there is room for improvement. Some of the pull-down menus are too long and could use better hierarchical organization. I would also like to see the type creation and edit model move from dialogue boxes to a live on document interactive model using palette controls and contextual menus. Perhaps we could see this with Mac OS X and its advanced Quartz PDF based graphics engine?

Typestyler's amazing abilities and versatility are difficult to describe Its multitude of unique type special effects can be combined in a nearly infinite number of ways to make a unique creation If you are a professional graphic artist—or Web designer—looking for a quick, easy and fun way to create marvelous type effects and backgrounds, then you should definitely check out Typestyler. ❑

Peter Milburn is a consultant with Elite Systems Support located in Calgary Alta. He can be reached at elite.systems@home.com

Eighties nostalgia British style

Nil—Take a trip down memory lane and see what was cool, and what now seems perhaps a little less cool in the 80s in the U K. TV, computer games, popular words and phrases are some of the things you can expect to read about, as well as world news and events as they happened. Also features an "on this day in the 80s" section

http://www.80snostalgia.com/

MCSE

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Total entries in salary survey 17222
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Average MCSE Salaries in 1999

Length of Experience	Total Compensation					
Under 6 Months	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
6 Months - 1 year	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
1-2 Years	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
3-4 Years	[illegible]	$54,700	[illegible]	[illegible]	[illegible]	[illegible]
5-6 Years	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
7-8 Years	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Over 8 Years	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

MCSE Requirements

NO Computer-Background is needs for MCSE certification enrollment. All Microsoft Certified Systems Engineers are required to pass four operating system exams and two elective exams that provide a valid and reliable measure of technical proficiency and expertise

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Video from you to the Web

By Hopland Seto

If you have a reasonably new PC, some patience, and inexpensive—or in some cases, free—video editing software, you can serve video from your own Web site. The technology that makes this possible is known as streaming video. If your PC isn't video-capable, the cost to upgrade it for streaming video production is relatively low, and basic streaming video software can be downloaded from the Internet.

Conventional video images (e.g. VHS quality or better) devour enormous amounts of hard drive space and computer resources, such as memory. Streaming video is a technology that takes video and audio information that is already in a computer format and further compresses and converts it into a form that can be sent efficiently over the Internet. Such compression and conversion is necessary because the bandwidth, that is the amount of information flow that can be handled by a modem on a regular telephone line is limited to at most 57 kilobits per second (57Kbps). Uncompressed video requires about 30 megabytes per second (MBps). This means that even using a six-to-one compression ration, for high quality video, the video flows at about 5 MBps, or roughly 700 times the capacity of the modem. Transmitting quality video images is analogous to squeezing water from a fire hydrant through a straw.

Making video fit

Several software companies are developing solutions for squeezing video movies into a form that can be viewed with a computer over the Internet. In all cases, the quality of the video image is compromised. The quality of streaming video is much inferior to broadcast images on a conventional TV set. Until bandwidth for the Internet is increased sufficiently (i.e. faster connections), this will always be the case.

Video compression works by taking the video information contained in each image frame and throwing away as much of that information as is practical while maintaining a recognizable image. Video compression software also compares consecutive video frames and throws out even more information that is redundant across those frames, further reducing the amount of information flow.

Video streaming is a separate process although what makes streaming feasible is the small file sizes created by video compression. Unlike other approaches to sending video over the Internet, streaming video allows the viewer not only to download video footage quickly, but also to watch it as it is being downloaded. This gives the effect of watching a live broadcast.

Streaming video requires that a "plugin" (most often available for free when downloaded) be installed in your Web browser in order to view the streaming video format. A plugin is a supplementary application that works in conjunction with the Web browser to process the video information created by a particular streaming video software.

Producing Web video

What follows is a list of the equipment and software that my brother and I have used to post video on my Web site. Many of you will guffaw at the "primitive" PC we use, which goes to show that current computer systems are more than sufficient to produce your own video for the Web.

My goal is to produce streaming video, as cheaply as possible, and also use a format that can potentially reach the most people. With that in mind, I chose the basic RealProducer G2 (not the more up-to-date Plus 7.0) which is available for free from the RealNetworks Web site (http://www.realnetworks.com/). I skipped over some excellent all-in-one solutions offered by RealNetworks in some of its more professional packages.

Video camera

We use a Sony VX 700, a one-chip digital video (DV) camcorder. (This very successful Sony product has been discontinued.) This is definitely overkill in the world of streaming video, as any cheaper camcorder will do. In theory, start with the highest quality footage possible before applying the software to convert it into streaming video format, but in practice, for purposes of the Web, the higher quality of the primary source will be compromised to fit the Internet bandwidth.

Unless you plan to use the video footage for other higher quality media in addition to streaming video, a less capable camera will be adequate. Better yet, borrow one from a friend or relative since video camcorders are now almost as common as TV sets and probably more ubiquitous than personal computers.

Powerhouse PC unnecessary

We are able to quite comfortably create streaming video clips on a PC with a 233 MHz Pentium MMX processor. The system has two hard drives: a 4 GB Western Digital and a 6 GB Quantum Ultra ATA. The first is used for my Windows 95 operating system and applications, and the second dedicated to video capture. Admittedly in practice, I tend to dump all sorts of data on this drive but nevertheless keep separate partitions dedicated to video capture. This reserved hard drive space ensures better video capture and more efficient management of large video files. You should allocate at least 500 MB for video files. Personally, I would go with nothing less than 1 GB.

I have 128 MB EDO RAM on an AOpen motherboard. Although 32 MB of RAM might be a working minimum, I recommend 64 MB or more.

It is possible to capture streaming video directly from a media device, such as a camcorder, but be careful to note the software manufacturer's minimum system requirements, which tend to be higher in such cases than if you are converting already captured video files (for example, AVI) into streaming video files.

If video is to be captured "live" directly from a camera or VCR, then a 400 MHz Pentium II or faster CPU is recommended for use with the streaming video production software, RealProducer.

The discussion up to this point is based on the assumption that the potential audience is limited to phone line access to the Internet, which in turn limits movies to 180x120 pixels and perhaps at most 240x180 pixels, depending on the frame rate. My particular sample video posting is 180x120 pixels at 30 frames per second (fps).

Video capture card

This is the most crucial piece of hardware you'll need to produce streaming video on a PC. Without it, you cannot load the video images from the camcorder or VCR into your computer. It also may be the most expensive single upgrade required.

The typical capture card takes the video signals from a camcorder or VCR and converts them into digital information consisting of ones and zeroes, then compresses them before saving this digital information into a computer file. The most common format for such a file is Microsoft's Video for Windows or AVI files.

I use the miro DC30 card from Pinnacle Systems to get video footage into my computer. (This model has been superseded by the DC30 Pro.) The quality of video is at the prosumer level and is another example of overkill in streaming video production. At $1,350, it is much too expensive a purchase if all you want to create is streaming video, but *may* be a good investment if you plan to distribute your video in other higher quality media. Check out Pinnacle Systems' Web site for less expensive capture cards suitable for streaming video. Its miro cards have garnered excellent reviews from video and computer magazines. (Also check *The Computer Paper's* April Lab Test report on video-editing products).

Cards suitable for streaming video can purchased for around $300 or less. A good source of product reviews, in addition to computer magazines, are magazines devoted to video or multimedia production, such as *DV (Digital Video)*, *Camcorder* and *Videomaker*.

Pinnacle Systems' Studio DC10 Plus is an example of a capture card towards the $300 end of the price range. AVerMedia's TV98, at around $110, is an example at the lower end.

Apple offers computers with a built-in video capture feature, which accounts in part for their higher cost (compared to a Windows PC).

Video editing software

If you want to weave a narrative out of your raw footage, then editing software is needed to cut and rearrange the footage and to add titles and, perhaps, special effects.

Sometimes video editing software is bundled with the capture card. The miro DC30 Pro, for example, comes with Adobe's popular Premiere 5.1. An earlier version of the package, Premiere 4.2, though, is more than adequate. The Studio DC10 Plus is bundled with Microsoft DirectShow. Another popular video editing software package is VideoWave III from MGI Software (http://www.mgisoft.com). Also check "Desktop video processing software" in the April issue of *The Computer Paper* for a review of popular video editing software.

Streaming video software

After video footage is captured onto your hard drive as an AVI file, streaming video software is needed to convert it into a more compact format that can be viewed with a browser installed with a streaming video plugin.

If you want to incorporate streaming video as part of your overall Web design efforts, one solution is to purchase an all-in-one solution. An example of this is Adobe's GoLive. There is even a free 30-day trial of GoLive 4.0 can be downloaded from Adobe's Web site (http://www.adobe.com). It also has training videos that you can stream off the Web site. The streaming format is QuickTime 4.0, an incarnation of Apple's popular QuickTime movie (MOV) format which plays on Macs and PCs.

GoLive is a full featured Web site development package, so it's an expensive (approximately $450) option if all you really want is the streaming video module. You can always download the QuickTime authoring software directly from Apple's Web site (http://www.apple.com) for US$29.95. QuickTime is one of the pre-eminent multimedia formats for the Internet, and with QuickTime 4.0, Apple has incorporated the ability to create streaming QuickTime movies.

Microsoft's Windows Media 4.0, which is bundled with the Internet Explorer 5.0, adds yet another choice for watching video on the Web. A recent review in *DV* magazine gives it a thumbs up for its power to integrate with other components on the Windows desktop. One can see the possibility of performing analysis with Microsoft Excel, writing a report with Microsoft Word, presenting to an audience with Microsoft PowerPoint and streaming video of the presentation with Windows Media Player 4.0.

I chose the RealVideo format mainly because of its immense popularity, but also because it is the cheapest solution—the streaming video software is free in the form of the RealProducer (a component of the Real System G2), a streaming video software package that can be downloaded from RealNetworks Web site. A beta of a more advanced version, the RealProducer Plus, is also available in a trial version from the same Web site.

(Actually, RealMedia refers to both video and audio, RealVideo refers to video, and RealAudio to audio streaming. In this article I use RealVideo to refer to both video with audio or just video.)

Audio card and speakers

The miro DC30 series includes audio capture capability. Purchasing a capture card with both video and audio is practically the best solution to lip-sync problems. Audio may not even be needed for home movies. But if audio is a must, then you'll need to purchase an audio card or make sure the video capture card you select comes with audio. Of course you will also need speakers or earphones.

Web page

Finally you need a Web page to post your video so your audience can stream the video through their Web browsers. Most Internet service providers offer an inexpensive personal Web page with their basic accounts. You will also need FTP software to manage files on your Web page. Again being frugal, I use free software I downloaded from the TUCOWS Web site (http://www.tucows.com). The RealProducer can create a Web page with the RealPlayer on it, which you can upload to your Web site. It's a simple matter to link to it from the home page.

For Web design, there's affordable Web design software like Adobe's PageMill. I like to use Netscape Composer (free in the Netscape browser package) to create my own Web pages. Nothing fancy, it just works.

Some of the best things in this world are free, including a lot of the software to get started streaming video from your own Web site. ❏

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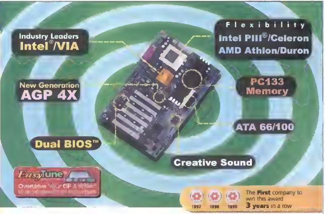

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WristThotic offers mobile mouse support

By Dave Chappelle

As more people spend more time in front of their computers more cases of repetitive stress injuries (RSI), such as tendonitis, and carpal tunnel syndrome (CTS), are reported

WristThotic
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Price: US$4 (suggested retail) plus $2 shipping

While there are ways to treat these afflictions, preventing them through improved work habits and workstation setup will save you the time, expense and pain of recovery There are many ergonomically correct devices designed to facilitate comfort and reduce the risk of strain and injury Most ergonomic aids come from third-party manufacturers because computer makers and their legal counsel don't want to admit injury can result from using a mouse and/or keyboard.

There are different types of wrist pads, chairs with adjustable arms, and other supports. So far, these devices have supported a user's wrist while remaining in one position.

Not so anymore, thanks to the WristThotic Developed by Don Corbett, a computer user with severe CTS, this product offers mobile support. The WristThotic takes the support idea a step further by moving with the user's wrist instead of remaining stationary The top of this pillow like device is a hypo-allergenic velvety fabric, the bottom is vinyl, allowing it to slide across desk surfaces easily It is recommended for use on slippery smooth mouse pad surfaces.

To adjust the amount of support, a user compresses the WristThotic to the desired level and covers the small air hole on the bottom with tape

There is a Velcro spot on the bottom for attaching the support to the mouse Removing the WristThotic leaves only the fuzzy Velcro spot 2.5 cm (1 in.) from the rear of the mouse If specified when ordering, an additional fuzzy dot is free. A second fuzzy dot can be placed on another mouse, or in another spot on the same mouse for a second user (The WristThotic Web site includes several photos of the device as well as a short instructional video in MPEG and ASF formats.)

Small movements of the mouse are accomplished easily with the WristThotic because of the flexible neck portion that attaches to the mouse It allows the wrist to remain straight level and fairly stationary while the thumb and fingers make tiny movements WristThotic says it offers a full refund if a user is not satisfied with the device To date there have been no returns, according to the company

A WristThotic has been attached to the mouse at my workstation in the *TCP* Test Lab for about three weeks When using it, I notice a tiny increase in the amount of pressure where the fleshy part of my forearm near my elbow contacts my desk. I think it's because I have to adjust to having my wrist well supported while being able to move freely at the same time It certainly doesn't cause discomfort. For a day or two I put a magazine (*The Computer Paper*, of course) under my elbow When sitting in a chair with padded armrests I don't notice any extra pressure My wrist is always relaxed while using the mouse now

I won't be returning the evaluation sample unless the good people at WristThotic request it In divorce lawyer parlance, it's "part of the lifestyle to which I've become accustomed"

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The high life on Everest

NB—Earlier this year there were as may as 20 teams hunkered down in just one of the base camps from which climbers regularly launch their assaults on Mount Everest. However, with June comes the monsoon season in the Himalayas and the crowds soon pack their tents and leave, with some of the stragglers still filing out this week. The Quokka Sports network through its MountainZone.com destination, launched a valiant effort to cover the pre-monsoon climbing action this year with its Everest2000 Web site. The site remains as a record of a number of these attempts - some successful, some not, but all making for dramatic tales, even when their collections of daily dispatches from climbers are read weeks after the fact.

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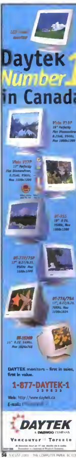
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Like music to your ears

What does it take to turn your PC into a music studio? For your listening pleasure, the *TCP* Test Lab looks at the latest in music hardware and software

By Sean Carruthers

When many people think of music on their PC, it's probably limited to the CD player or MIDI files. For more and more of us, MP3 is beginning to gain a lot of ground, too. But with the improvements in the speed and robustness of basic components in the PC, more users are turning to their PC when they want to make their own music.

There is the perception that you still need a high end (and very expensive) recording studio to generate professional quality music, but a lot has changed inside the PC to make it a viable platform for recording. The most fundamental change over the last few years has been the adoption of high quality sound cards as standard equipment, even on value-oriented systems. Basically if your sound card can record at 44 KHz in 16-bit recording depth you can, theoretically, capture the same sound quality found on most compact discs. As long as the rest of your computer is up to the task, and you have a bit of patience, you can get down to recording your own music!

The little things

Before you try to get started make a checklist of all the things you'll need, and all the instruments you want to use:

- Will you want to use a microphone for the instruments (acoustic guitar, horn, violin), or can they connect directly (electric guitar, drum machine, keyboards) to your PC?
- Is your microphone of sufficient quality? A cheap microphone may not be up to the job if it's too cheap. You don't have to go too far in the other direction though as you can often find microphones for $40 to $50 that will provide adequate results.
- Most of the basic sound cards use 1/8-inch stereo jacks, but most music equipment uses 1/4-inch mono plugs. You may need adapters, if they don't come with your sound card.
- You may also need splitters to turn the 1/8-inch stereo jacks into two individual RCA jacks, for input from stereo equipment (turntables, cassette, VCR).
- Will the things you plan to plug in directly require pre amplification before hitting the PC? Some microphones and instruments may provide a low signal level: if they are recorded at a low level and then boosted in mixing, unwanted noise or hiss may be introduced. It may be better to pass the signal through another device first, like a mix board or a compression pedal.
- If you plan to use your current sound card, are the input jacks accessible? If you plan to plug and unplug a lot of equipment, it's important to make sure you can get to the jacks easily.
- Do you plan to record more than one instrument at a time? If so, you'll want to make sure you have a sound card that accepts multiple inputs (if you want to record each track discretely) or use a small mix board first. You may be able to find a relatively inexpensive four track mixer at an electronics shop like Radio Shack.

Processor power

Processor power isn't as important as you'd think for the actual recording process, although it certainly plays a part. While you're recording, the sound card does most of the work and sends the audio signal to the recording medium. During our testing, CPU utilization rarely crept to more than 10 percent using a 600 MHz processor. Most of the hard disk recording software packages don't need much more than 300 MHz processor for optimal performance according to their specs.

On the other hand, it's always better to have a bit of leeway when recording, because a slower processor may cause other system events to back up, which could have an impact on your recording. If you check the hardware requirements of your preferred software package and find that your processor is closer to the minimum than the recommended, it may be worth considering an processor upgrade or at the very least adding a bit of extra RAM to prevent the system from swapping to the hard disk in the middle of recording.

Suitable storage

The biggest bottleneck you'll likely have when doing hard disk recording is your hard drive. A good percentage of computers feature UDMA/33 hard drives (which have a 33 Mbps transfer rate between the drive and the PC) or even older slower drives. Although UDMA/33 isn't too bad, it will only allow so much data at one time, and when you start piling on too many audio tracks, it will start to choke. We did our testing using UDMA/66 hard drives, which allow twice the throughput (66 Mbps), meaning twice the number of audio tracks can be utilized comfortably.

At boot-up, you can tell what kind of drive you have by watching the Power-On Self Test data (if your PC flashes a logo, you can often get rid of it by immediately pressing the ESC key). There is a big data box that flashes on your monitor just before the PC switches over to the Windows startup screen, listing all of the system's vital statistics. Check the section for hard drives (you may need to press the pause key), and note what "type" is displayed, which will be listed as "Type x," "UDMA x," or perhaps just "X" following the size of the drive. Type 2 denotes UDMA/33 drives, and type 4 means UDMA/66.

If you have a slower drive, you may want to upgrade in order to do more meaningful multitracking, but be careful: it's not just a simple drive replacement. To be able to use the full potential of a UDMA/66 hard drive, you need a motherboard that can handle the faster transfer rate—typically the primary IDE socket on such a board is blue instead of black.

Alternately UDMA/66 functionality can be dropped into an older system with an add-on PCI card, available from various manufacturers. This has another hidden advantage: even if you've already reached the maximum number of IDE devices your motherboard can support, you can keep your old hard drives in the system and simply add in a new high speed hard drive as a dedicated music drive. The catch is, you'll again have one free PCI slot and free IRQs on your system to handle the card.

A scuzzy solution

While your music may or may not be scuzzy, if you're planning to use more than just a handful of tracks in your multitrack software maybe your hard drive should be—SCSI, that is. SCSI (Small Computer Systems Interface) is nothing new. In fact, it's been one of the storage solutions favoured by power users for quite a while because of its higher throughput.

At the top end, SCSI hard drives feature throughput speeds of up to 160 Mbps, which is nearly three times that of IDE. The drives also spin up to 10,000 rpm, which allows them to get the information off the platter faster. When you have multiple tracks of high quality (and thus high bandwidth) audio, getting all the data in time for the transfer is just as important as the speed of the transfer itself.

Unless your motherboard has SCSI built right in (most don't), a SCSI hard drive will require a special controller. Again, you can replace the motherboard with one that also adds SCSI, but it's probably easier to buy a PCI card based solution. Also, there's a good chance that a motherboard will be using a slower version of SCSI, and a card means you can get the speed you want and have the option of upgrading it easily down the road.

The catch here? Again, you need a free PCI slot and IRQ. The overwhelming catch, however, is that SCSI is a very expensive way to go. SCSI hard drives are still far more costly than their IDE counterparts, controller cards are also a pretty penny, and the price of the cables (both internal and external) often seems extortionary. Why bother, you ask? Well, if you're a professional, the excellent performance is worth every penny. Many SCSI cards also feature external connectors, which means you can use the same card to add a Jaz drive or external CD RW drive to your system if you like.

If you're only planning to use two or four tracks at a time, though, breathe a sigh of relief now and stick with your much more affordable IDE drives.

The recording essentials

If you're planning to do hard disk recording, you need the following two things, or it's not even worth considering: a good audio card, and the software to capture and edit the audio. For this month's review, we've focused on those two aspects.

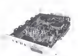
Our test bench was a 600 MHz Pentium III on an Asus P3C2000 motherboard, with the front side bus running at 133 MHz. The system used 256 MB of PC100 SDRAM, an ATI Rage 128 video card, and a Seagate U8 31722lA hard drive (using UDMA/66). On to the recording!

The hardware

If you want to do hard disk recording, you'll need a way to capture the sound and get it into your computer. Here are a few options available for digitizing sound, though there are certainly more basic sound cards available that will also capture audio. These cards reviewed were selected for specialization in a certain area, whether it's MP3 encoding or flexibility of input/output connections.

Note: Pricing is estimated, and is subject to change.

Creative Sound Blaster Live! MP3+



From: Creative Labs, Inc.
Tel: 800-998-1000 http://www.soundblaster.com
Estimated price: $149

Highlights

- The MP3+ model is an updated version of Creative's incredibly successful Sound Blaster Live! series of cards. In addition to high-quality four-point audio, the MP3+ adds hardware-enhanced MP3 encoding, which is up to five times faster than straight software encoding.
- The rear of the card has a pair of speaker jacks (front and rear), and 1/8-inch jacks for microphone and line-in. A joystick port on the back can be used as a MIDI port, although the adapter is optional.
- The MP3+ card features 16-bit recording depth, and 48 KHz maximum sampling/playback rate.
- Signal-to-noise ratio for the card is greater than 96 dB and total harmonic distortion is 0.002 percent.
- The digital output can be hooked directly to Creative's line of digital multimedia speakers (under the Cambridge Soundworks brand) for extra-clean sound reproduction.
- The card comes with an interface for connection to the Live Drive, which is optional, and features extra input and output ports for both audio and MIDI. The Live Drive I, which is available separately for US$150, features coax S/PDIF input and output, a 1/4-inch headphone jack, 1/4-inch microphone jack, and MIDI input/output jacks. The Live Drive II, which is US$150, also adds RCA input/output and optical S/PDIF input/output jacks.
- Those who want the MP3+ and Live Drive simultaneously can get them as a bundle called Sound Blaster Live! Platinum, which is reviewed below.
- The software bundle includes Cakewalk Express 8.0 Gold and Sonic Foundry's Sound Forge XP 4.0 (both for recording and editing), Creative Digital Audio Center (which encodes and plays back MP3 files), and assorted other titles including Creative WaveStudio, Mixman Studio, Keytar, LAVA, Rhythmania and more. A full list with descriptions can be found at Creative's Web site.

While it's not ideal for users who want to record their own material into the computer (owing to the lack of front-facing connectors), the Sound Blaster Live! MP3+ is, nonetheless, a powerful little card. It uses the environmental audio extensions of the basic Live! card, which provides high quality 3D sound.

The key selling point of this model is the MP3 focus, with hardware acceleration cutting down encoding time substantially. You can still use the card for recording your own material by using the 1/8-inch jacks on the rear of the machine, which can be a bit inconvenient, especially if your audio equipment uses the more standard 1/4-inch jacks. You can get adapters for this from your local electronics shop, though, which may be more cost effective than the full Platinum package for those on a budget. The included software bundle is quite extensive, and features almost everything beginners will need to get started with digital audio.

Creative Sound Blaster Live! Platinum

From: Creative Labs, Inc.
Tel: 800-998-1000. http://www.soundblaster.com
Estimated price: $299

Highlights

- The Sound Blaster Live! Platinum line is pretty much the

Continued on page 61

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Like music to your ears

Continued from page 59

same card as the Live! MP3+ model (reviewed above), but with the Live Drive included. Audio specifications are the same.

- The Live Drive fits into an empty full-size bay (same size as a CD-ROM drive) on the front of the PC, and uses the smaller floppy-drive-size power connector. Make sure you have both free before you purchase the Platinum bundle!
- A data ribbon connects the Live Drive to the sound card itself, inside the PC.
- The front of the Live Drive features MIDI input/output, 1/4-inch jacks for headphones and microphone, and coaxial S/PDIF input/output. This is in addition to the 1/8-inch line and microphone input jacks already on the rear of the sound card itself.
- The software bundle for the Platinum card includes the same audio software as in the MP3+ package, plus a game bundle (Thief, Descent 3 and Need for Speed 4).

The Sound Blaster Live! MP3+ is already an excellent card, but when you add the Live Drive and call it the Live! Platinum, it becomes an even better deal for users heavily involved in audio recording and MIDI. The biggest catch is that you have to have room inside the PC for it. If all of your full size bays are in use, you can't really use the Live Drive portion of the Platinum bundle, unless you're willing to let it hang outside the case, which is unsightly (as well as exposing it to dust and curious fingers).

This card offers a few key benefits. First, it locates the inputs and outputs conveniently on the front of the PC instead of forcing you to dig through the mess of cables at the rear of the PC in order to plug in a new audio cable. Secondly, it only uses the same number of IRQs (two) and PCI slots (one) for both sound card and Live Drive as it would for just the sound card. Third, the price is still relatively low compared to more professional solutions. Granted, it doesn't offer the same power and flexibility of those more expensive solutions, but for those who haven't quite hit the big time, it's a really nice compromise.

(Note: the Platinum ships with the original Live Drive I. Those who want Live Drive II, with the optional RCA and optical S/PDIF connectors can upgrade for US$49 if they return the Live Drive portion of the bundle.)

M Audio Delta44 / Delta 66

From: Midiman
Tel: 800-969-6434 http://www.midiman.com
Estimated price: $599/$749 (converted from US$399/US$499)

Highlights

- Instead of replacing your current sound card, the Delta series of cards are add-on only, meaning they will take up one extra PCI slot and one more IRQ.
- Instead of being located on the back of the card, most of the input jacks are located on a breakout box, attached by a cable to the back of the card.
- The Delta 66 card features stereo S/PDIF input and output, and the breakout box features eight 1/4-inch jacks–four for input and four for output. The Delta 44 drops the S/PDIF connectors, but features the same-size breakout box.
- The setup of the breakout box makes it easy to patch signals out to an effects processor and back into the PC with a minimum of hassle, provided your recording software can handle this.
- Because it's a dedicated solution, it can handle a lot of information simultaneously, and audio quality is top-notch, using 24-bit sound instead of the standard 16-bit found on consumer sound cards, and with a maximum sampling/playback rate of 96 KHz full-duplex, which is double the consumer standard.
- Digital-to-analogue dynamic range is 108 dB, with only 0.0015 percent total harmonic distortion. Analogue-to-digital is 99 dB and total harmonic distortion 0.0023 percent.
- Analogue inputs and outputs can be configured to handle +4 dB through -10 dB signal levels.
- The Delta series of cards work with both Windows-based machines (95/98/NT) and Macs (provided there is room for a PCI card, which means not an iMac).

Users who are a bit more serious about their digital recording will be interested in the M Audio series of cards, because they offer double the sampling rate and higher bit depth for recording. This means higher-quality capture and higher-quality output. Even better, the breakout box can be placed on top of the PC, around the side, or wherever there's room, just so long as the cable will reach. Anyone who has to plug and unplug audio cables repeatedly during the course of a recording session will appreciate the flexibility of this setup, especially if they want to use an external effects box.

On the downside, it's on the pricey side for the casual user, especially as you still need a high-quality sound card on top of the Delta card. For a more professional musician, however, the card is a boon, as it brings exceptional quality down to a price point that's more attractive than the high-end models. Those who want S/PDIF input and output will want to go for the Delta 66, but most users should find the more value-oriented Delta 44 perfectly adequate.

Turtle Beach Montego II Home Studio

From: Voyetra Turtle Beach Inc.
Tel: 800-233-9377 http://www.voyetra-turtle-beach.com
Estimated price: $369 (converted from US$249)

Highlights

- The Montego II Home Studio package is a combination of hardware and software from Voyetra Turtle Beach.
- The hardware component is the Turtle Beach Montego II card, which has a maximum sampling rate of 48 KHz and a recording depth of 18 bits. Like the Sound Blaster solutions, this PCI card replaces your current audio card.
- Signal-to-noise ratio is greater than 97 dB, and total harmonic distortion is less than 0.0032 percent.
- The main sound card features both line and microphone input, both 1/8-inch jacks, as well as the speaker output jack. There is a joystick port, which also doubles as a MIDI port with the included adaptor.
- For full functionality, the Montego II requires two brackets on the rear of the machine, because both coaxial and optical S/PDIF inputs and outputs are on a separate board. This board does not need to be plugged into a

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PCI slot, however and can be placed on any unused mounting slot (the cable between them is about 15 cm long)

- Unlike some of the other solutions, the Montego II Home Studio comes with a number of bundled cables, including an adapter to turn the joystick port into MIDI in/out, and two 1/8-inch plugs that split into stereo RCA jacks
- The Montego II includes Aureal's A3D sound positioning for use with a pair of speakers
- The software component of the package features Voyetra's Digital Orchestrator Pro, which handles multi-track digital audio recording and editing as well as MIDI. Also included is AudioStation 32, which integrates CD equalizer and MIDI functions.

The Montego II Home Studio is another nice all in one bundle, with all the hardware and software you'd need to get started right away Unfortunately all of the connectors are located on the back of the PC, which can be a bit inconvenient for those who need easy access to the connectors. The good news, though, is that it comes standard with more connectors, both coax and optical S/PDIF, and the MIDI adapter all ship in the box, meaning you don't have to buy adapters or upgrades. After conversion, it's a bit pricier than the Sound Blaster Live! Platinum, but the higher recording depth, optical jacks and extra cables may just make it worthwhile.

Hard disk recording, editing software

In the past, multi track recording was something you did on tape or on a highly specialized (and expensive!) computer setup. Some Apple machines have been capable of hard disk recording for a while but now the lower cost larger capacity and higher speed of PC hard drives have brought hard disk recording capabilities to a wider range of users. We looked at a few of the software packages available both for digital audio multi tracking and MIDI.

The more full featured packages tend to be pricey, but trial versions of many of these packages are available at the company Web sites, which allows you to get a feel for the programs before you lay out your money Limited-feature versions of some of these programs also ship with some sound cards.

Note: prices are estimated and are subject to change!

Cakewalk Pro Audio 9

From Cakewalk

Tel 888-225-3925 http://www.cakewalk.com

Estimated price $649 (converted from US$429)

Highlights.

- Supports 96 KHz recording with a 24-bit recording depth
- Source selection includes MIDI and as many audio input sources as you can find. As well, sources can be mixed within a single project.
- Stereo audio can be digitally edited, as can MIDI (either by notation, tablature, or raw data).
- Individual "tracks" can be mono or stereo, patched back out of the PC, and mixed down based on panning.
- Console view makes it easy to set up the program like actual multi-track hardware, including record solo and mute "buttons."
- Effects can be added individually by track or patched in from external devices. Many of these effects can be previewed in real time, using WavePipe technology.
- Tempo counter allows you to keep track of the recording either by time increments or by measure.
- Time compression/expansion allows change in clip length without pitch change
- Files can be mixed down to Wave, RealAudio, Windows Media ASF and MP3
- External video can be imported and synced to the audio

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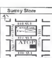

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Continued from page 62

- DirectX plug-in support
- Notation based data can be printed out as sheet music
- Supports Windows 95/98/NT
- Minimum hardware: Pentium 200 MHz with 64 MB of RAM (for 95/98). Pentium 300 MHz with 128 MB of RAM (for NT). Recommended: Pentium II 300MHz with 128 MB of RAM

In the time we spent with Cakewalk's Pro Audio 9, we were only able to scratch the surface of its functionality: there's just so much included. Hard disk recording was very easy and the setup was relatively intuitive for anyone who has used multi-track recording hardware. It was also relatively easy to import multiple sound files and merge them all together provided the files already existed. It's hard to say too many good things about this package because it was one of the most feature-packed packages we saw, and was relatively easy to use despite its power.

Sonic Foundry Sound Forge 4.5

[illegible]

Tel: 800-577-6642 http://www.sonicfoundry.com
Estimated price: $499

Highlights

- Supports sample rates up to 96 KHz with 16-bit recording depth
- Simple user interface is deceptive because it has a lot of very powerful editing tools, including EQ, trim and crop, invert or paste, reverse, time compress/expand, and more
- Non-destructive editing features allow previewing of effects and edits
- Multiple-level undo function prevents accidental data loss (if you realize you did something wrong three or four steps back, for example)
- Program generates MIDI time code, and can send audio data to external sampler equipment
- Supports MP3 encoding and decoding
- For full functionality, users must register the product, either online or by phone. Otherwise, the full version will appear to be a trial version. Registration unlocks

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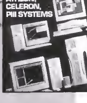

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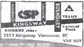

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Continued from page 64

both the program and the MP3 plug

- Batch conversion handles groups of files, instead of forcing the user to do them all manually
- Loop editing tools are included for use with Sonic Foundry's ACID music creation software
- Can be used with RealSystem G2, Netshow 3.0 and WMA audio files
- Audio can be synced to external video, and mixes can be used for multimedia authoring for the Internet
- DirectX plug-in support
- Supports Windows 95/98/NT
- Minimum hardware: Pentium processor with 16 MB of RAM.

Professionals working on their home PC have long appreciated Sound Forge when it comes to digital audio editing. Multiple broadcast quality stereo audio files can be brought up and edited together to create a single stereo broadcast-quality output file. It's not really a multi track solution per se, but it's powerful enough as a stereo solution that it may become indispensable.

Sonic Foundry Vegas Pro

From: Sonic Foundry Inc.
Tel: 800-577-6642. http://www.sonicfoundry.com
Estimated price: $669 (converted from US$450)

Highlights

- Supports sample rates up to 96 KHz with 24-bit recording depth
- Multi-track setup supports an "unlimited" number of discrete audio tracks, according to the package, but the actual number of tracks you can support really depends on your computer hardware. More RAM, faster processor, faster hard drive, etc. means more comfortable multi-tracking with higher numbers of tracks
- Multiple tracks can be simultaneously imported into the work window simply by dragging up from the directory explorer window [illegible] main screen

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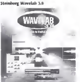
- Non-destructive editing and multiple-step undo/redo is a very powerful setup that will prevent accidental data loss
- Each track can be set as solo or mute, like with a mixing board, and each track can be individually panned
- Multiple input and output support allows external effects send and return as well as simultaneous multi-track recording
- Supports Windows Media, RealAudio and MP3 (with optional plug-in) formats
- Includes MIDI time code sync
- Audio can be synced to external video and markers can be used for multimedia authoring for the Internet
- DirectX plug-in support
- Supports Windows 95/98/NT
- Minimum hardware: 200 MHz processor with 32 MB of RAM. 400 MHz processor with 128 MB of RAM recommended

Fans of Sonic Foundry's popular Sound Forge software will also love Vegas Pro, which features the same powerful non-destructive editing and effects, and is just as easy to use. When you add theoretically unlimited multi-tracking, you've got a winning combination for the former/current Sound Forge user and the newbie alike.

Steinberg Wavelab 3.0



From [illegible] GmbH
Tel: 416-789-[illegible]00 http://www.steinberg.net
Estimated price: $849

Highlights

- Can record at 96 KHz with 24-bit recording depth
- Non-destructive editing and real-time effects previewing
- Multiple-step undo and redo prevents accidental data loss
- Clip-based editing allows multiple clips to be layered within the same track, clip-level panning and volume control, phase-cancellation fixing and automatic cross fades
- Real-time effects include reverb, echo, chorus, stereo expander, limiter, noise-gate, resampling, and more. Off-line effects include time stretching and reduction, pitch shifting, normalization and more
- Batch processing eliminates tedious repetitive manual tasks
- Program can import tracks from CD audio
- Includes support for MP3 importing and exporting
- Sounds can be exported to industry-standard external sampler hardware
- The program requires the Wavelab CD be inserted while working, which may be annoying for some users when doing other work requiring the CD drive
- In addition to the sound recording and editing, Wavelab 3.0 features CD burning software allowing users to burn a disc on the fly right from the program
- Supports Windows 95/98/NT/2000
- Minimum hardware: Pentium 166 MHz with 32 MB of RAM

As you'd expect from a company that is so well known in the musical community, Steinberg's Wavelab 3.0 is a very powerful stereo audio editing solution. Because of the way the program is laid out on the screen, it's

➤

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Like music to your ears

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perhaps a bit difficult to use if you're not quite sure what you're looking for. With some patience, though, many users will find it has virtually everything they'd want. The CD-burning component is a nice bonus.

Steinberg Cubasis VST

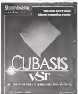
From Steinberg Soft-und Hardware GmbH
Tel. 416-789-7100 http://www.steinberg.net
Estimated price: $249

Highlights

- Can record at 96 KHz with 24-bit sampling depth
- Records both digital audio and MIDI up to 64 tracks in total. Can play up to 32 audio channels simultaneously at CD quality, provided the PC hardware is up to the task
- Steinberg's Arrange Window allows you to drop in loops, WAV files and MIDI data at various points on a timeline for powerful arrangement of discrete sonic elements.
- Separate audio and MIDI mixboards provide greater control over the recording and editing, and both are set up like an actual mixboard with solo, mute, insert, panning and volume controls.
- Event-based MIDI editing can also be set up in notation format, which can be printed out as sheet music.
- Multi-step undo and redo
- There are a number of "virtual instruments" built into the software, including a bass guitar that can be "picked."
- Like Wavelab, Cubasis VST comes with built-in CD burning software
- Supports Windows 95/98.
- Minimum hardware: Pentium 200 MHz with 64 MB of RAM. Pentium II 300 MHz with 128 MB of RAM recommended

Cubasis VST is another program that packs a ton of functionality into one box, and again, Steinberg's musical background shines through. As with Wavelab, however, the screen layout and control sequences are confusing because they're less than intuitive and user friendly much of the time. That's not to say the program isn't a capable multi-tracking solution; with a bit of work, all of the powerful features of the program become more noticeable than the aesthetic drawbacks.

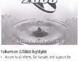
The mixboard features will be appealing to anyone who's worked on a professional mixboard, and the CD burning feature is a really nice touch. Overall, a really powerful all-in-one solution, though you may find yourself banging your head on your desk every so often while you're trying to learn it.



Syntrillium Cool Edit 2000

From Syntrillium Software Corp.
Tel. 480-941-4327 http://www.cooledit.com
Online price varies: see below (download only)

Cool Edit 2000, which is the updated version of the popular Cool Edit 96 software, comes in a few different configurations to meet different needs. All are download only, but pre-purchase trial versions are available that provide access to most of the features (two at a time only) for 30 days. If you decide to buy, you pay for an unlock code to access all of the features simultaneously.



Full version (US$69) highlights

- Access to all effects, file formats, and support for Syntrillium's Studio Plug-In and Audio Clean-Up Plug-Ins (both detailed below).
- MP3 encoding and decoding is supported.
- Reasonably powerful editing capabilities, considering the lower cost of the package, including amplification, normalization, channel mixing, envelope, echo, delay, reverse, flange, reverb, quick filter, noise reduction, distortion, and stretching.
- Frequency analysis function.
- Special looping features allow you to adjust sample in/out points while sample is playing.
- CD player controls
- Studio Plug-In (available for an additional US$49) adds a four-track mixer, and stereo mixdown capabilities. It's not quite as powerful as some of the multi-track software detailed above, but for users with minimal needs, it offers a lot of bang for the buck.
- Audio Cleanup Plug-in (available for an additional US$49) eliminates pops and crackle and features hiss reduction, which can be a boon for those who want to fix up old audio or cassette recordings.
- The full version of Cool Edit 2000 also comes in a bundle with the Studio Plug-in for US$99.
- Supports Windows 95/98/NT/2000.
- Minimum hardware: 16 MB of RAM (no minimum processor listed)

Life version (US$39) highlights

- This program is virtually the same as the full version in look and feel

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Managing knowledge in small business

Once exclusively an enterprise play, knowledge management is becoming a useful tool for businesses of all sizes

By Tom Venetis

It's not uncommon to think of knowledge management a strategy for large corporations only. With their hundreds of employees, many of whom are often scattered around the country or internationally, managing the information that is inside each of those employees' computer systems—and heads—makes knowledge management a necessity.

Recently, Stamford, Conn.-based Gartner Group Inc. predicted that the knowledge management market would grow to US$4.5 billion by the end of this year. By 2003, Gartner predicts that more than half of all *Fortune* 1000 companies will put some kind of knowledge management solution in place. It's no wonder then that smaller companies and businesses would think knowledge management is something only the big boys get to play with.

Knowledge as general asset

That assumption is beginning to change, however, with many more small Canadian businesses starting to look seriously at the benefits of managing knowledge.

Margie Leslie, business tools marketing manager for the Mississauga, Ont.-based Microsoft Canada, says the size of a business should not be a factor when considering whether to use a knowledge management solution. In fact, a small business may be in greater need of some kind of knowledge management solution than a larger one.

The reason is simple. A small company is very dependent on the knowledge its staff possesses. Many times a single person can be an expert in several different areas of a small company's business. If that person leaves, all that knowledge goes out the door with them, leaving the company scrambling. A large corporation has the benefit of their critical knowledge being shared by several different people.

Having an effective knowledge-management solution is one way of making sure a smaller company does not suffer a critical blow if a key employee decides to leave.

But once a small company decides to look at knowledge management seriously, the first problem it will inevitably encounter is trying

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Wireless networks coming of age

At the Microsoft TechEd conference held in Orlando, Fla., in June, I experienced something that convinced me that wireless networks are finally coming of age. On the very large trade show floor of the Orange County Convention Center, Proxim had set up three "hot" or wire-free zones at the invitation of Microsoft. Anyone with a computer fitted with a Proxim RangeLAN2 PC Card could access a LAN that had been set up for the conference and was thus able to connect to the Internet while moving untethered in the hot zone.

> Some environments call for the elimination of wires on aesthetic grounds. Examples include conference rooms, lobbies, lunchrooms, customer briefing centres, and executive suites on the business side, and most rooms in the home.

Conference participants could borrow cards from Proxim for the duration of TechEd, and hundreds did just that.

California-based Proxim has been involved in wireless developments for more than 15 years. It has a complete range of products for the home, small office, enterprises, and service providers. It bills itself as the leader in wireless LANs, and that is true in terms of market share and years of experience. I was told at its booth that Proxim wireless solutions are being used on every stock exchange floor in the U.S. with the single exception of the New York Stock Exchange.

Now that companies the size of Intel and 3Com have entered this booming market, Proxim's position as leader may be in jeopardy. Regardless, its products have established a track record and deserve to be better known in Canada, especially if its prices drop as a result of the serious competition it now faces.

Proxim's wireless enterprise solution uses one or more RangeLAN2 Access Points (available in Ethernet and Token Ring mod

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These bots were made for walking

...and talking, and shopping, and searching, and just about anything that can save time at the PC

By Curtis Cook

The term "bot" is short for "robot," and is also known as "agents" or "intelligent agents." Designed as a simple form of artificial intelligence (AI), they can simplify many tasks that a small business faces in today's fast-paced environment.

There are countless bots designed as software tools to pore through massive amounts of data. They can compare product prices, track down the latest news in a particular industry, or even help customers order online. The one thing they all have in common is that they work on the premise that if you give a bot directions to find information you need, it will come back with answers.

Bots are most commonly used right now to sift through online data. Since Web servers are connected through the Internet, bots can quickly and efficiently scour through significantly more data than a human given the same amount of time. They can catalogue whatever information is found based on your priorities and deliver the requested data back to your hard drive with little more than a few keystrokes. Some of the more common bot types include stock bots, shopping bots, spider bots, news bots, and Web development bots.

Stock bots

Stock bots can automatically send investment alerts, market prices, market indicators, or the latest initial public offerings (IPOs) that hit the market in a particular industry.

Chad Robinson, a sales representative for Century 21 in Gloucester, Ont., who is starting to sell more commercial properties, uses bots to follow trends in industries his clients specialize in, and to help him with his personal investments.

Robinson says he uses two main Web sites for finding investment information, including Quicken.ca (http://www.quicken.ca) and Yahoo.ca (http://www.yahoo.ca). Both sites employ bot technology to search vast amounts of company news and deliver it to the desktops of people researching investments.

"You can go onto a site like Quicken.ca and type in the stock ticker symbol like COR for Corel Corporation and it will bring back all the information that has been published on the company," says Robinson. "That's the way I follow different business and industry trends for investing."

He finds that incorporating that bot technology into his life has been quite easy, even though, like many realtors, he works long hours seven days a week. "For the average Joe Internet user I think bots are becoming more accessible," Robinson adds.

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Managing knowlege in small business

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to define exactly what knowledge management involves. It is a notoriously nebulous term, having as many definitions as there are companies offering knowledge management solutions and consulting.

Microsoft's Leslie defines knowledge management as a discipline that recognizes the value of all the intellectual capital in an organization and the need to treat that capital as a managed asset.

"Taking it one step further, Microsoft's approach is to provide technologies that enable knowledge workers to get access to the information they need, when they need it and where they need it," Leslie adds.

Leslie says knowledge management involves three important areas: collection of the knowledge in an organization, analysis of that knowledge so that it can be applied to various business needs, and communicating that knowledge to everyone else in the business.

Microsoft's recently launched Project 2000 software covers these three areas so companies can better organize their intellectual capital and resources, particularly when it comes to coordinating a specific project.

"When a company is using Project 2000, they can get a good view of their resource availability and thereby set up more realistic project schedules," Leslie continues. "They can also analyze the status of a project and take a look to see if there are any underutilized resources. You can also get a very realistic cost estimate of a project and [Project 2000's] visualization features allow a project manager to take a snapshot of the progress of a project and allow him to see where it is in terms of the projected project time."

Along with Project 2000, Microsoft has released Project Central, a companion product that is supposed to improve the collaboration and communication between people sharing knowledge and information in a company. It allows people to better schedule tasks and data, and interact with a project manager across an intranet.

Leslie says that with the rapid acceptance of the Internet among businesses, it has made it easier for small- and mid-sized companies to use knowledge management solutions like Project 2000 and Project Central. Both products make interaction over the Internet or an intranet a key feature allowing companies to better coordinate the tasks of co-workers who are separated geographically.

"Web collaboration is now key because when you think of the amount of time and work that was spent in the past trying to find out where all the information was in an organization, and now you can get at that information through the Web by email or by checking a server, is key to the success of knowledge management," Leslie adds.

Using the Internet to bring knowledge management to smaller companies is key to Lotus Development Corp's upcoming Raven solution.

Raven will contain several parts. It will come with an application template library and services, a knowledge portal and a discovery engine that will help locate the various experts in a company and connect them to the catalogued information in its database.

"Lotus's knowledge management strategy is all about people, places and things," says Claudine Simard, national technology manager for Lotus Development Canada in Toronto.

Raven will also incorporate many key knowledge management and organization features that are found in many of Lotus' current set of products. As an example, the Lotus Sametime solution that allows for the quick searching of experts in a company will be part of Raven's Expertise Locator. And key aspects of LearningSpace and QuickPlace solutions—which handle creation of team rooms for virtual meetings, discussions and sharing of information—will be incorporated into Raven's knowledge-portal component.

"At Raven's core, there is Domino, Sametime and the DB2 database," says Simard. "Raven allows you to go out into the information and not only do document management, but it will catalogue that information and put it into context," Simard adds. "A crawler will go out and search all of the available information. So if your topic is, let's say 'knowledge management,' it will go out and find where it may be in five different databases, four different discussion groups, and six experts. It will get all of this knowledge so you can move forward."

Key to making all of this work is the knowledge portal. This virtual portal allows companies to use the Internet to bring people and knowledge together in a central area that can be accessed anytime and anywhere. This is especially useful for businesses that have mobile workers or with offices spread across a city, province or country.

Portal technology for knowledge management is also offered by Computer Associates International with its Eureka solution. Eureka was part of a set of solutions that Computer Associates acquired when it bought Sterling Software Inc. earlier this year.

Recently, Markham, Ont.-based Delano Technology Corp. launched its Knowledge Management Server, which extends and integrates with its current e-Business Interaction Suite. Companies can use the Knowledge Management Server to manage, capture and reference information so it can be made available to all employees. It also allows for creation of portals where people can share information.

But Computer Associates points out that having a solution—whether it is a full integrated suite, such as the upcoming Lotus

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Raven product, or a stand alone portal solution that can be integrated into a knowledge-management solution—is but a first step, and maybe not the most important one

"It is a mechanism" says Margaret Brooks, vice president for the business solutions group with Computer Associates International in Memphis, Tenn "Knowledge management takes culture, technology and leadership"

"The tool is the last thing you consider," adds Peter Rakoczy director of enterprise services for Microsoft Canada in Mississauga Ont "What is required is the culture that will support it and the necessary processes an organization needs to make it work. If I have a white paper that I think is valuable to others in an organization I need to know what to do with it where to store it and what taxonomies to use so people can find it The technology is a tool to enable this."

Certainly the greatest difficulty in getting a knowledge management solution to work is the sometimes maddening problem of getting people to actually share their knowledge

I don't care if you are a small or large company" says Priscilla Emery senior vice-president of information products and services for the Association of Information and Image Management (AIIM) in Silver Spring, Md "It is a challenge to get people to share information across different departments and different types of areas in a process driven manner so that decisions can be made effectively"

AIIM is a non profit industry association representing some 10,000 world wide members who are involved information and image management. AIIM has been in existence for some 50 years and keeps abreast of the latest technologies and solutions that can be of use to its members

One of those solutions is knowledge management AIIM tries not only to be aware of the various knowledge-management technologies available but also helps overcome many of the corporate cultural challenges that can make putting knowledge-management solutions into place difficult.

The biggest challenge to overcome is the idea that knowledge is power that having more knowledge than anyone else makes an individual more valuable and indispensable Hoarding information is not only bad for the overall health of the business, it can have personal disadvantages as well

"If you are the only person who knows anything, you are going to get pretty tired of getting all the calls," Emery adds 'Sharing knowledge is very important for sanity purposes.

Along with helping its members decide on knowledge management solutions, AIIM is putting its own knowledge management system into place Upcoming additions to its Web site will include access to a library of more than 30 000 abstracts It will also be adding new features to its corporate intranet to make sharing information among members and staff easier For Emery, it is the Web that is making knowledge management a possibility for smaller organizations like AIIM

"We don't recommend specific vendors, but we do talk about the technologies that are out there" Emery says "We would not be discussing knowledge management if it was not for the Web and the ubiquitous nature of that access Knowledge management is a concept that has been around for a long time but it has only been in the last two years with the use of the Web technology that we now have a unified view of the information that are on today's platforms" ❑

These bots are made for walking...

Continued from page 69

Shopping bots

While it may not be an obvious application for businesses, shopping bot technology can provide insight into market prices competition, and product features Using shopping bots to keep up to date on consumer information can save a significant amount of time and money if your company promises the best prices. Keep in mind that there are really no "pure" comparison shopping sites Sites that employ shopping bots usually have arrangements with merchants to display the retailers goods in a search The results shopping bots' results may be skewed in favour of merchants that have agreements with the site.

Another type of shopping bot searches online auctions to find the best prices. BidFind for example, crawls through 325 auction sites to find the best price for a particular item Its agents have the capacity to update information on 200 000 items, twice a day

Spider bots

Most people are probably familiar with spider bots, although they may not realize it These are the workers" behind search engines They scour the Web for new sites to catalogue and register in their databases When someone enters a search, the site simply checks its files to find the information

Spider bots like InfoBeat (http://www.infobeat.com/cb/cgi/cb_merc.cgi) are customizable for personal or business use If there are Web sites you want to track, you deploy your own spider bot to find the information you need You simply provide the URL, indicate how deeply you want to dig through the information contained in the site, and specify the type of information you want. Some spider bots give you the option of searching for sound clips, video clips, graphics, and text.

News bots

Perhaps the most common form of bots for business uses are news bots. These Web sites are like portals for various other media

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Pocket PC a third-time charm?

By Jacques Surveyer

With the launch of the Pocket PC platform, one of the Microsoft story lines—third time's a charm—is getting repeated. Microsoft lore is that a) it never gives up on a market that was big enough to snag its attention and b) sometimes it misses, but by the third try, its engineers and product managers have homed in on a market in such a way that they create killer applications capable of stopping the competition in its tracks.

The recent introduction of the Pocket PC is just such an opportunity to test the third time golden story as previously told with the debuts of Windows 3.0, Microsoft Word and Excel.

So let me spell out some of the facts and you can be the judge of whether Microsoft's new Pocket PC deserves to enter the pantheon of Microsoft's glorious third time charm mythos.

Most Windows CE devices have been caught in a form-to-function wasteland: too big, bulky, and pricey to be a PDA; yet too small, clumsy and underpowered to be a lightweight notebook.

Third time charm

3Com's Palm PC has, according to market research firm International Data Corp., about 80 percent of the handheld PDA (personal digital assistant) market in Canada, and a slightly lower but still overwhelming share of the PDA market worldwide. Other major PDA competitors are U.K.-based Psion, Casio and Sharp from Japan, and Compaq and Hewlett-Packard from North America. With the exception of Palm and Psion, all the other vendors have some version of Windows CE deployed on their PDAs.

With two tries, Windows CE is still losing badly to the Palm Platform, whose small, pocket-size form factor seems to be what the market is demanding. Most Windows CE devices have been caught in a form-to function wasteland: too big, bulky, and pricey to be a PDA, yet too small, clumsy and underpowered to be a lightweight notebook. Only in some industrial markets, like inventory taking and specialized scanning, have Windows CE devices found a niche. But the new Pocket PC may be another story.

Table 1 shows a detailed comparison between standard features of three current Palm models versus the Compaq's new Pocket PC powered device, the iPaq. For roughly the same price, Pocket PC delivers the same size and weight, but with a 65,000 colour display, eight times the memory, a CPU that is eight times faster, sound, video, and a richer variety of expansion options. The Palm wins with better battery life (the Pocket PC needs a daily recharge, while the monochrome Palms will go for at least a couple of weeks without recharge). In addition, one Palm, the Palm VII, directly supports wireless programs (an exploding market—think email, and pager like capabilities). But

Continued on page 81

IBM sets Linux sights on the enterprise

By Tom Venetis

With Linux's popularity among programmers and its present status as a media darling, it seems odd to ask whether Linux is ready for prime time.

But that is just what some people are asking as Linux looks to move into higher end systems and gain a larger market share for itself in the enterprise market. Recently George Weiss, an analyst for the Stamford, Conn.-based Gartner Group Inc. wrote a commentary for CNet News saying that Linux still had a ways to go before it was going to move out of its traditional market of server appliances and Web-based applications.

"If a viable market is to develop in high end Linux severs, strong independent software vendor enthusiasm must be present," Weiss argues in his column in late May. "However, the big software developers are already locked into specific platforms and require additional resources or a need to substitute Linux for an existing one."

That may be about to change now that IBM announced it is offering Linux on its S/390 enterprise servers along with complete support and service offerings from IBM's Global Services division.

A year ago, zero percent of CIOs said that Linux was part of their environments. Now, 13 percent of CIOs say Linux is part of their environment.

—Robert LeBlanc, IBM Canada

"If you look at the data, 40 percent of all spending on severs is Internet related," says Robert LeBlanc, vice-president for software strategy at IBM Canada Ltd. in Markham, Ont. "A lot of people are using Linux today to run their businesses. A year ago zero percent of CIOs said that Linux was part of their environments. Now, 13 percent of CIOs say Linux is part of their environment."

LeBlanc says some 25 percent of all new servers installed in 1999 were Linux based and recent estimates from Framingham, Mass.-based International Data Corp. (IDC) suggest some 11 million people are currently using systems running Linux.

Linux in a box

IBM hopes that its support for Linux at the enterprise level will create a new market for its S/390 servers and its support offerings,

Continued on page 83

Apple News

Free USB printer sharing for Mac OS 9

By Justin Siemens

June is generally the calm before the storm that is Macworld New York, so there is not much to announce before we go to press with the August issue. However we have managed to dig up a few Mac tidbits for you, and we promise to have a full rundown of all of the news from Macworld in the next issue. The current rumours about the July 19-21 expo and conference include distribution of free copies of OS X beta for all those who attend, as well as the first sight of new iMacs and possibly even new iBooks. But for now, only time, and Steve, will tell.

USB printer sharing for OS 9 released

Apple recently released some new software for OS 9 or higher that allows you to share any USB printer on TCP/IP via Ethernet or AirPort networks. This is a first for Apple, which in the past only supported printer sharing for its own printers. This now means that, for example, a single USB colour photo printer can be shared by an entire workgroup, instead of having to be moved from desk to desk. Also, with the advent of the sub-$500 USB laser printer, small office settings can now get 600 dpi (dots per inch) laser performance without having to spend $1,000-plus for a network laser printer.

The software, which is free, will work with any version of system 9.0, and requires a PCI Power Macintosh with USB ports to be the host computer. It is available now for download from http://www.apple.com/

New ROM for G4, iBook, new Powerbooks and new iMacs.

Apple has released a new version of the firmware for all its currently shipping machines. It fixes many small bugs and also adds the ability to boot from FireWire devices on Macs with built-in FireWire ports. The firmware is stored on the processor card and is the first thing that loads when your Mac is turned on before you see the happy Mac face. By installing the new firmware users will be able to boot from FireWire and USB devices, making it much easier for many iMac and G4 users to create an emergency startup disk on a Zip or external hard drive—something they could previously do with SCSI, which is no longer a built in feature on new Macs. Installing the firmware takes about five minutes, and once done the changes are permanent. On G4s the update also fixes some issues faced by users who have more than 1 GB of RAM installed.

New Canon Elph tiny, Mac friendly

In June, Canon released a new model in its popular line of Elph mini zoom digital cameras. From the front the camera is about the size of a standard credit card. Its very sleek casing is made of lightweight aluminum. The new Elph features a 2x optical zoom and a 4x digital zoom, which is less than most larger cameras, but still good for such a small model. The image sensor is 2.1

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Other items not in list	Pls call

Music to your ears
Continued from page 68

- No MP3 encoding or decoding in the lite version.
- No plug-in support.
- Although effects are included with this version, the "fancy" ones–including compressor, delay, distortion, echo, echo chamber, envelope, flange, filter, noise reduction, quick filter, reverb and generation of DTMF tones– have been disabled.

When it comes to low cost audio editing solutions, the consumer versions of Cool Edit have always been nice because they are far cheaper than the more professional packages, but often offer more power than the novice audio editor will ever need. Both versions of Cool Edit 2000 follow that trend, though the lite version is rather limited. The full version's effects, MP3 compatibility, and plug-in support are excellent, though, and the lower price of the package makes it just the thing for beginners.

Syntrillium Cool Edit Pro
From: Syntrillium Software Corporation
Tel: 480-941-4327 http://www.cooledit.com
Estimated price: $599 (converted from US$399)

Cool Edit Pro is similar to Cool Edit 2000, but is much more powerful.

Highlights:

- Supports up to 192 KHz recording, and up to 32-bit recording depth
- Up to 64 tracks of audio recording, featuring controls similar to those you'd find on a mixboard, such as solo/mute/record, volume controls and panning
- Support for multiple input and output sources, which allows effects send and other external processing

- Multiple-level undo, preventing accidental data loss

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- Double the number of effects of Cool Edit 2000, also including chorus, click/pop and hiss reduction, clip restoration, EQ, multitap delay, vocoder, pan/expand, phaser and hard limiting. Users can get a real-time preview of many of the program's effects instead of having to wait for processing
- Program can be synced to MIDI via triggering or slaving
- DirectX plug-in support
- MP3 is not supported natively, though a plug-in can be purchased for US$29 to handle encoding and decoding
- Supports Windows 95/98/NT
- Minimum hardware: 486 processor with 8 MB of RAM (though you'll certainly want more!)

For the more experienced and demanding user, Cool Edit Pro is a better choice than Cool Edit 2000, because it offers more tracks to work with, more effects, and a number of other features to make life easier. Despite the extra features and capabilities, the program remains easy to use. Unlike 2000, Cool Edit Pro is available at retail level, complete with bonus materials (sound effects and sample files) and a hard copy of the manual.

Next month. Stay tuned, because we'll review a few things that don't fit into either of the above categories, including notation-based composition software, audio restoration software, and a few fun and educational products.

Editor's choices

Hardware:
Midiman M-Audio Delta 44

While it's too expensive for the casual user, those who are getting serious about PC audio recording will love what the Delta series of cards have to offer. The Delta 44 is the best value for those who don't need S/PDIF, offering the basics: four inputs and four outputs in a standard 1/4 inch jack format. Very nice.

Software:
Cakewalk Pro Audio 9

Pro Audio 9 is pretty hard to resist. It's easy to use, has virtually all the features you'll need for recording and editing, and it's not even the most expensive package of the bunch. It offers a ton of performance in one box. ❑

Free USB printer sharing
Continued from page 72

megapixels. Images are stored at a maximum size of 1,600x1,200 pixels, but can also save images at 640x480 if you only intend to use them on the Web.

The Elph comes with an 8 MB compact flash card and has a built-in USB port, which makes transfers to any new Mac both easy and fast. The camera includes software for making QuickTime VR panoramas from your photos, as well as a copy of Adobe's Photo Deluxe for Mac and PC. The camera also includes a rechargeable lithium-ion battery, which is a nice touch as many digital cameras still run on AA's only. The Canadian street price is $850 and it should be available now. Check out Canon's PowerShot site (http://www.powershot.com/s100/s100.html) for more information. ❑

Jordan Siemens is a Macintosh IT specialist based in Vancouver, B.C. He can be reached at jsiemens@mac.com.

Uncle Matty dogs it online

NB—Matthew Margolis, better known as Uncle Matty of the PBS television series *Woof! It's a Dog's Life*, has brought his popular pooch-pacifying methods online with his own Web site. Margolis, whose National Institute of Dog Training in Southern California is described as the Betty Ford Clinic for problem pets, has handled the dogs of celebrities such as Goldie Hawn, Drew Carey, Elizabeth Taylor and Madonna. On the Web site, surfers can visit the training centre, where each animated pooch has a problem visitors can learn to solve. A "Dear Uncle Matty" column gives visitors a chance to ask specific questions about their own pets.

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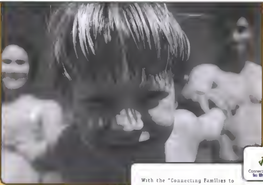

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These bots are made for walking...

Continued from page 71

Pointcast, for example, employs bot technology to gather news from various sources and deliver it free to subscribers.

"My first experience with bots was using Pointcast when it came out, but I found that I wasn't really getting a lot of information from it," says Robinson.

The company had planned for significant success with its software yet has been criticized for its inability to make its plans a reality. Like many people who have used Pointcast, Robinson says that "I didn't really commit to using it." Once something more suitable for his needs came onto the market, he started using it instead.

Since Pointcast's debut, there has been a flood of news bots on the Internet. Some of the most popular are CreAte Your Own Newspaper (CRAYON), CNN Custom News, and Dow Jones Business Information Services (BIS).

CRAYON (http://crayon.net/) is a customizable tool for managing news resources on the Web. CNN Custom News (http://customnews.cnn.com/cnews/pna_auth.welcome) allows users to receive stock quotes, local, national, and international news, and more, from CNN and more than 100 magazines and other types of publications. Dow Jones BIS (http://bis.dowjones.com/) offers regular updates of business news publications, online research services, clipping and tracking services, personal finance and investing.

Web development bots

Web developers are also jumping on the bot bandwagon. Chris Foo, a Web application developer for Macadamian Technologies Inc. in Ottawa, has used bots in his work.

"When I worked as a Web consultant, I used Teleport Pro (http://www.tenmax.com/teleport/pro/home.htm) to get a closer look at my clients' Web sites," says Foo. "It allowed me to get a comprehensive look at their sites. Basically I sent the Web development bot to the Web site from a remote location to gather all the files, HTML and text. It would download 10 items simultaneously with a fast Internet connection, rather than downloading them one by one.

"The bot saved me a lot of time. I found that using a bot was far more efficient than looking at every page individually. After employing the bot to download the material, I was able to review the code to make improvements on my own time," adds Foo.

Canadian-based Watchfire has created several Web development bots, Linkbot, Macrobot and Metabot to assist with testing Web sites. Founded in 1996 as Tetranet Software Inc., the company develops Web site measurement, analysis, and reporting tools including some integrated solutions with FrontPage and Macromedia DreamWeaver.

Linkbot, Macrobot, and Metabot enable Web site developers or managers to gather information about the content and quality of the sites they are reviewing, with such features as automatic scanning for problems on the site or in the HTML code. Linkbot automatically checks for broken links, slow loading pages, broken anchors, and missing meta data, as well as 50 other problems with Web sites. Watchfire's latest version Linkbot Pro 5.5 for developers retails at US$495 for a single user license.

"Metabot really helps you to find the value of metadata," says Watchfire representative Ren Ockle. Metadata is all the hidden code—including hidden text, metatags and author tags—in an HTML page. "It's what search engines use to find you on their sites," says Ockle. Metabot sells for US$495.

Macrobot performs transactional testing for online sales and e-commerce functions. "It finds the problems with your site before your customers do," says Ockle. "In the world of e-commerce, if people have a bad experience on your Web site, it reflects on you." Suitable for e-commerce developers, Macrobot retails for US$2,995.

Soon, Web developers will be able to use bots to develop applications for the Palm VII. AlphaCONNECT Internet division of NQL Inc. (formerly AlphaServ.com at http://www.alphaserv.com/), has recently added support for the Palm VII in its intelligent agent/Web development language, Network Query Language (NQL).

Hot bot spot

If it seems like there is a bot for anything, but you want to be sure, visit BotSpot (http://www.botspot.com), "the spot for all bots on the Web." If it exists, BotSpot will try to find it.

A better understanding of the business and personal applications of bots can help minimize information overload, and can prevent those bots from walking all over you. ❑

Curtis Cook can be reached at ccook@go-global.net

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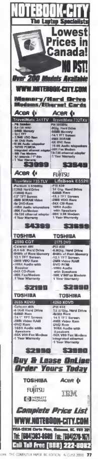

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The Computer PAPER

Online & Connected

Internet Trends • Wired and Wireless • Online Services • Work & Play on the Web

Fight email snoops by cutting your own keys

By Antonietta Palleschi

The Internet was not designed for privacy. If you send out information on the Internet, whether by email, instant chat or newsgroup posting, you should treat the information as public. Assume that anyone can read, archive and replay anything you send out. Furthermore, Internet protocols allow anyone to forge a message, making it appear as if you are the author of the message.

If you've ever been on a telephone party line, you have an idea of the privacy level of email—you can make person-to-person calls, but you can't prevent others from listening in on the conversation.

With email, you are passing a plainly written note across a series of computers, hoping no one listens in by looking at it. That's because any connection on the Internet usually goes through intermediate computers. An email to a friend would follow the path from your computer to your service provider's computer, across the Internet to your friend's service provider, and then eventually to your friend's computer.

Messages going from one computer to another don't always follow a direct route, however. The Internet was designed to use multiple paths of communication in case one route disappeared or was terminated (part of the plan was to maintain communications in the event of nuclear war but pulling the plug on a computer is handled as well). These paths are not always the shortest or most direct. The point is that email goes through various anonymous locations before it reaches its destination, each of which potentially has a chance to peek at the part of the message it handles.

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Symantec spins Internet Security three ways

Finding that one size does not fit all, Symantec Corp. has released three different versions of its Internet Security home firewall product.

Consumers can now choose between Personal Firewall 2000, Internet Security 2000 and Internet Security 2000 Family Edition.

"Internet Security was basically a personal firewall, URL filter for parental control and anti-virus built into one product," says Jim Galpin, consumer sales manager for Symantec Corp. in Vancouver, B.C. "What we realized was that many people don't need something like the anti-virus product because they may already have it and they may not care about the parental control if they are simply a business customer. So we took out the firewall piece and made it its own product, and those that did not care for the parental controls, we made Internet Security. The Family Edition contains everything."

Along with splitting up the product to better reflect market demands, Symantec has added support for Windows NT 2000 across all of the editions. Future versions, slated for release late this year or January 2001, will feature support for the upcoming Windows ME edition. There will also be improvements made to the anti-virus feature of Internet Security 2000 and Internet Security 2000 Family Edition.

Galpin says all the products are aimed at the growing number of people who are switching to broadband access to the Internet.

According to Galpin, some one million Canadians are using cable modem and another one million are using DSL-based Internet access systems.

The Personal Firewall 2000 product gives customers protection against hackers and alerts users of potential intrusions. The Personal Firewall can also be set to prevent personal data from being sent out over the Internet and to block Java applets, Active X controls and Internet cookies. The Internet Security 2000 has the same intrusion protection features, but includes Symantec's latest version of its Norton Anti-Virus product and controls to block banners ads and pop-up windows.

The Family Edition of Internet Security adds various parental controls to block sites parents might find objectionable and the ability to configure the Internet access of different users.

—*Tom Venetis*

Weaving your own Web site: Part 57

XHTML (aka HTML 5.0): Part II

By Keith Schengili-Roberts

In Part 56 of this series (see *The Computer Paper* May 2000 issue) we looked at some of the basics required for formatting and writing code for Web pages using the new XHTML (extensible hypertext markup language) specification. In this article we look at some of the other requirements as well as what a sample XHTML Web page code would look like.

One other thing Web authors will have to get used to under the new XHTML specification is that they have to specify the document type for every Web page. This is done using the <!doctype> tag at the top of each page. This is occasionally used today but it is a requirement under XHTML.

Under the XHTML specification, there are three different document types (as set by the <!doctype> tag), which correspond to the "strict," "transitional" and "frameset" document types as laid out in the HTML 4.01 specification. What this means is that you have to have <!doctype> tag at the head of every Web page and your code must conform to the document type specified. In a nutshell, the strict document type is a Web page that uses clean *structural* markup using only Cascading Style Sheets (CSS) and excepting formatting tags like <FONT> or the BGCOLOR attribute with the <BODY> tag in order to format the page.

The transitional document type is to be used for Web pages that use those formatting tags that will one day become obsolete. Finally, as you might gather from the name, "frameset" refers to a Web page that uses frame tags.

Here's how you would specify the strict, transitional and frameset document types under XHTML.

```
<!doctype html
  public "-//w3c//dtd xhtml 1.0 strict//en"
  "dtd/xhtml1 strict.dtd">
```

```
<!doctype html
  public "-//w3c//dtd xhtml 1.0 transitional//en
  dtd/xhtml1 transitional.dtd">
```

```
<!doctype html
  public "-//w3c//dtd xhtml 1.0 frameset//en"
  "dtd/xhtml1 frameset.dtd">
```

Of these three it is expected that the transitional version of <!doctype> tag will be the most used by Web authors, at least in the short term, as they begin to adopt their pages to fit the new specification.

Bye bye bozo code

Have you ever wondered how browsers got so big in terms of file size? One reason why they tend to get larger and larger is because of the extensive rules added to browsers in order to be able to correctly interpret what's known as "bozo code." Because XHTML forces Web authors to write valid code, one of the side

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Fight email snoops

Continued from page 79

Web-based email systems (such as Hotmail) add to that with an additional security problem. Because they can be viewed via a Web browser, the programming language of the browser (JavaScript) can be activated, potentially opening a security breach.

Security on the cheap

The first step towards privacy is encryption. Using encryption, you can create an email message that no one but the designated recipient can read.

While encryption goes a long way to protecting your privacy, some information is nevertheless leaked out. If you email an encrypted message to an online job board or to your competitor, even the fact that you sent the email may cause you trouble at work, so beware. No encryption program hides the source and destination addresses of your message.

The next step towards protecting your privacy is authentication. Using a digital authentication protocol, you sign each message you send out.

Signing a message requires knowing a secret key; verifying the signature requires knowing a (different) public key. Thus, while anyone can verify that your digital signature is valid, only someone who knows your secret key (ideally no one but you) can create a digital signature.

PGP and GnuPG

The most widely used email encryption and signing tool is PGP (Pretty Good Privacy). While it's an excellent tool, it has serious problems. The public key algorithm (RSA) is patented in the U.S. and the encryption algorithm (IDEA) is patented in the U.S. and some European countries. While PGP (http://www.pgp.com) is free for non-commercial use, it requires a licence for commercial use.

GnuPG (GNU Privacy Guard) is a free (under the GNU General Public License) encryption and authentication tool meant as a drop-in replacement for PGP.

Unfortunately, because PGP uses patented algorithms, GnuPG (http://www.gnupg.org) can't decrypt or verify PGP encrypted or signed messages. However, because GnuPG is free, you can expect it to become widely used. Eventually, interoperability won't be a problem. It is available via download from the GnuPG Web site. I recommend downloading the source code and verifying its signature with PGP. Then build the program with the usual configure; make command. For something as important as encryption, do not trust pre-built binaries.

Generating a key

Once you have installed GnuPG, you should generate your public and private key pair. First, you will be prompted for the type of key you want. The default (DSA for signing and ElGamal for encryption) should be fine.

Next, you will be asked for the key size. The default of 1 024 is probably OK. After asking a few more questions, GnuPG prompts you to enter a pass phrase. Because anyone who has access to your private keys can decrypt messages intended for you and sign messages to make them appear to come from you, GnuPG does not store the keys directly. Instead, it encrypts them using a symmetric encryption algorithm with the pass phrase as a key.

Choosing a good pass phrase is critical to the system's security, since it is most likely the weakest link in the entire chain.

GnuPG then generates a key pair. The good thing about Linux is that it has a built-in secure random number generator. While many programming languages such as C and Basic have pseudo-random number generators, they are not cryptographically secure. They usually use a simple algorithm to generate sequences of numbers. (If you know the last number generated, you can often predict the rest of the pseudo-random sequence.)

Linux, on the other hand, uses true sources of randomness like keyboard input, mouse motion, network packet reception and so on to create an entropy pool of random bits. These bits provide a very secure starting point for key generation.

Immediately after generating your key, you should generate a revocation certificate. This is a signed message that invalidates your key. If someone ever gets hold of your private key you should publish the revocation certificate far and wide so the corresponding public key is invalidated.

Of course, you should not allow someone else to get hold of the revocation certificate; otherwise, they could invalidate your key pair. Your private keys and revocation certificate should be stored securely—for example, burned onto a CD-ROM, then placed in a safety deposit box.

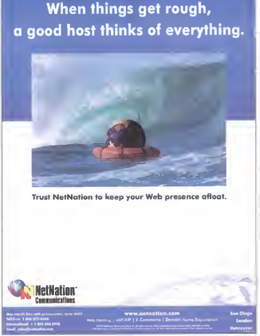
Safe email

The subject of security shouldn't terrify you into never using email again.

There are thousands (possibly millions) of messages flowing daily—the chance that someone will read yours is virtually nil. However, it's not impossible, so the degree of security you should provide is directly related to the security you need on your message.

Don't worry about security when you're telling everyone about your vacation, but security precautions are appropriate if you're planning a hostile takeover, sending out your resume or passing along private financial information.

Email, like the old party line, means possibly sharing information you don't want to share. By taking precautions, you can feel comfortable with the technology and explore arguably one of the most convenient and inexpensive ways of communicating with others on the Internet. ❑



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Pocket PC

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Pocket PC does provide two add-on wireless expansion options for an extra cost.

Does Pocket PC exploit this comparative hardware advantage? Both Palm and Pocket PC offer equivalent applications for calendaring, to do lists, address book contacts, memo pads, and processing of downloaded emails. Both sync data from these applications with a PC. (Palm also supports Mac and Linux desktops, while these connections are still in the works from third parties for Pocket PC.)

But perhaps the biggest difference is in the expense application. While Palm has a nifty expense application, Pocket PC supports Pocket Excel—which, in addition to an expense program, has a neat portfolio application and can of course, be set up to perform a wide variety of spreadsheet tasks.

Palm simply does not run programs equal to Pocket Excel, Pocket Word or Money. Palm's browser requires special Web pages which are clipped for Palm viewing, whereas Pocket PC's Internet Explorer can display any Web page while providing stylus-enabled scrolling for viewing. With sound and video available on the Pocket PC, third party software firms are working on delivering training videos on these handheld devices running this platform. And of course the industrial Windows CE developers welcome the extra speed and capacity—especially the multi-megabyte CompactFlash drives (IBM recently announced a 1 GB version of its CompactFlash II microdrive) for their database driven applications using C++ and Visual Basic for Windows CE.

The joker in the deck is the reliability of the Pocket PC code. After forever saying measures of reliability for its operating systems were not available, Microsoft PR representatives freely stated on the launch of Windows 2000 that Windows 95 required a reboot every 2.5 days, while Windows NT 4 required one every 5.1 days, and Windows 2000 was going on three months and had not yet required a reboot in ZDNet benchmark tests.

However being from Missouri and having lived with the now acknowledged relatively low reliability of Microsoft's desktop OSes, it might be prudent to wait and see if the Pocket PC OS is at least as reliable and robust as Windows NT 4. *(Our ongoing tests of Windows CE 1.0 and 2.0 devices indicate that Windows CE rarely crashes. Hardware issues have caused more problems. —Ed)* And then to wait and see how the market in general will react to that level of robustness, keeping in mind that the Palm OS, though relatively stable now, has had its own teething troubles.

However, that being said, the critical difference between the Palm and Pocket PC is that the Pocket PC's hardware takes advantage of state-of the-art low-power, compact chip technology, and its associated expansion capabilities.

In describing their own platforms, the two camps reveal their differing philosophies and the tradeoffs each has made in developing their technologies.

At Palm Source 99, Palm OS engineer, Bob Ebert, described the new colour processing capability in the new Palm IIIc with colour screen:

- No polygons, arcs or regions.
- No colour patterns.
- No multi-colour fonts.
- No Alpha channels, direct mode.
- No encapsulated drawings (Postscript).
- No flood fill.
- No sub-pixel rendering of fonts.
- No panning, sprites, ray tracing, texture mapping.

"I could go on for a long time here, but I trust you get the idea," said Ebert. "In short, don't expect too much. It's a portable, low power, 16 Mhz 68000 CPU with 16-bit databus and no floating point support. Think Zen of Palm: do more with less."

In contrast, the Intel literature on the StrongARM 32 bit processor used in the iPaq Pocket PC, touts the System on a Chip integration, which delivers cost-effective solutions. The Intel StrongARM 1110 206 MHz 32 bit processor consists of:

- Processing core has 16 KB instruction and 8 KB data caches, MMu, read and write buffer for fast development with advanced C/C++ software tools.
- Memory and PC Card control module provide flexible support for all possible memory configurations, including SDRAM, SMROM, ROM, Flash memory, DRAM, SRAM, and PC Card signals.
- System control module provides a wealth of device controls including 28 general purpose I/O ports, real time clock, watchdog, power management controller, interval timer, and interrupt controller.
- Peripheral control module provides on-chip control for specific devices, including six channel DMA controller for I/O 16550 serial port UART, LCD controller, IrDA infrared port, USB end point interface and codec modem interface.
- Developers can use these features and resources to build libraries of new feature-rich, industry leading applications for StrongARM based products and reduce overall time to market.

In sum, it appears the essential trade off between the two product lines is use of power. Palm saves power, offering 20 times longer battery life. Pocket PC exploits power, offering much more out of the-box software and processing power with very strong (but potentially bulky) CompactFlash based expansion capabilities. A good part of any Pocket PC success is due to the hardware and the fact that the OS takes advantage of that hardware.

Conclusion

Third time's a charm? Whatever your assessment, the Pocket PC might also appear to be a case of Moore's Law coming to the rescue of Microsoft. Until low power, compact, high functionality chips like the Intel StrongARM processor became available, Windows CE seemed doomed to be a niche player in the handheld and PDA markets. But then again, Microsoft has been planning on and writing its software for constantly improving memory, CPU chips, and disk capacity.

In fact, just as at the low end, there may be a more interesting mirror of these circumstances coming at the top end of computer hardware. Will the introduction of Intel's Itanium chip along with Windows 2000 and its emerging Back Office 2000 cohorts make high end servers such as the IBM AS/400, HP 3000 PA-RISC, or even top end Unix systems dead men walking? ❑

Contact the author at [illegible]

Table 1. Comparison of Palm and Pocket PC models

Features	Palm IIIC	Palm Vx	Palm VII	iPaq Pocket PC
Price	$675	$650	$675	$650
Processor	16 MHz 68000	16 MHz 68000	16 MHz 68000	Strong Arm32 206 MHz
Memory	4 MB	2 MB	4 MB	32 MB, 16 MB ROM
OS size	0.4 MB	0.4 MB	0.4 MB	4 MB
HotSync cradle	yes	yes	yes	yes
Screen	Color 160x160	Monochrome	Monochrome	Color 240x320
Weight	195 g (6.8 oz.)	113.5 g (4 oz.)	190 g (6.7 oz.)	170 g (6 oz.)
Dimensions	13.3x8.25x1.9 cm (5.25x3.25x0.75 in.)	11.4x7.8x1 cm (4.5x3.1x0.4 in.)	13.3x8.25x1.9 cm (5.25x3.25x0.75 in.)	13x8.75x1.6 cm (5.11x3.28x0.62 in.)
Battery type	Lithium ion (rechargeable)	Lithium ion (rechargeable)	AAA	Lithium polymer (rechargeable)
Battery duration	2 weeks	1 month	2-4 weeks	14 hr
Wireless	Add on	Add-on	Standard	3 options
Sound	No	No	No	Mic, speaker
Input modes	2	2	2	Soft keyboard, handwriting, smart keys
Add-ons ports	Serial, USB, IR	Serial, IR	Serial, IR	Serial, USB, IR, stereo
Other expansion	Palm	Palm	Palm	CompactFlash, PC Card

XHTML (aka HTML 5.0): Part II

Continued from page 79

effects will be that Web browsers of the future need not be so big.

As an example of an anti bozo function built into one of the two major browsers, write out the following code and try it out in both Internet Explorer and Netscape Navigator:

```
<TABLE>
<TR>
<TD>A too-simple table
```

Internet Explorer will be able to display the words "A too-simple table," but Netscape Navigator will not. This is because bozo code rules written into Internet Explorer essentially close off the table for you, displaying the results, even though it is not coded properly. Netscape Navigator does not, and therefore displays a blank page.

Trying to take into account all of the ways people can write bad code has led directly to browser bloat. The programming code necessary for interpreting regular HTML is small, but it has been estimated that at least 1 MB of the two major browsers is devoted to handling bozo code. That means that as XHTML becomes widely adopted, browsers can be smaller yet fully functional for all sorts of new devices. It has been estimated that within the next couple of years up to 75 percent of Internet access will be through non-traditional computing platforms, such as PDAs, TVs, automobiles, telephones and possibly even fridges and other household appliances.

This is all very well, but the last thing you want when creating a simple Web page is for it to fail to show up in a Web browser. To ensure your code is well written, and therefore displays properly, Web authors need to get into the habit of using validators that check their code.

The World Wide Web Consortium (W3C) has its own validator (at http://validator.w3.org) that checks code against the XHTML specification. You can also use a tool like HTML Tidy (http://www.w3.org/People/Raggett/tidy), a simple software tool that goes into your code and tidies it up for you. As XHTML becomes accepted in the Web authoring community, you can expect built in validators and code-tidying programs to become more common in professional and shareware HTML coding tools to help make Web pages XHTML compliant.

More code, more robust pages

One thing you can count on when writing XHTML compliant Web pages, is that you'll be writing more code. Because of all of the rules introduced in the new XHTML specification, even a fairly simple Web page will be longer than before. The one advantage of this over the old ways is that people will forced to write proper code for their Web pages.

As an example of how much you can expect your code to expand, check out the following equivalent Web pages, one created with HTML and the other with XHTML.

HTML version:

```
<FONT FACE="Arial, Helvetica">
<B><I>this is correctly nested</I></B>
<P>
<A HREF="fred.html" NAME="Fred"><IMG SRC="fred.gif"
HEIGHT=50 WIDTH=50></A>
<FORM POST="anywhere">
<INPUT TYPE="checkbox" NAME="a" CHECKED>This is
checked
</FORM>
<HR>
```

XHTML version:

```
<!doctype html
  public "-//w3c//dtd xhtml 1.0 strict//en"
  "dtd/xhtml1-transitional.dtd">
<html>
<head>
<title>Sample Page</title>
<body style="font-family: sans-serif">
<b><i>this is correctly nested</i></b>
<p>
<a href="fred.html" id="Fred"><img src="fred.gif"
height="50" width="50" /></a>
</p>
<form post="anywhere">
<input type="checkbox" name="a"
checked="checked">This is checked
</form>
<hr />
</body>
</html>
```

The page created with XHTML utilizes as many of the rules inherent in XHTML as possible. To recap the main rules behind XHTML are:

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XHTML (aka HTML 5.0): Part II

Continued from page 81

- Certain XHTML elements (such as `<head>` and `<body>`) must always appear on a page
- Tags and attributes must be in lowercase
- All XHTML elements have to be "closed" (a `<p>` must be followed by a `</p>`, for example, and "empty" elements such as `<hr>` become `<hr />`)
- Any attribute values must be in quotes (such as `height="50"`)
- Minimization of code is no longer allowed (for example: `checked="checked"`)
- The "id" attribute replaces the old "name" attribute (for example `id="Fred"`)
- Extended characters need to be explicitly defined prior to use

One of the implications of XHTML—the introduction of CSS code—can also be seen between the two pieces of example code above. Notice how the CSS code `<body style="font-family: sans-serif">` replaces the old `<FONT FACE="Arial, Helvetica">` from the HTML example. Under the strict XHTML guidelines, tags like `<FONT>` are no longer allowed, so you will need to brush up on CSS to format your Web pages.

By the way, the XHTML code example listed above will work in both major browsers. Give it a try! ❑

Next time: An introduction to extensible markup language (XML)

Keith Schengili-Roberts welcomes any comments, suggestions or HTML tips you may have. You can email Keith at: robertsk@wave.home.com. His new book on Cascading Style Sheets published by Prentice Hall Core CSS (ISBN: 0-13-083456-4) is now available in bookstores.
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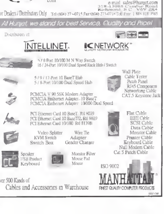
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IBM sets Linux sights on the enterprise

Continued from page 72

particularly as companies begin replacing their Unix machines with Linux-based systems. In order to help this transition IBM is also making available a set of what it calls In The Box solution packs. These are non S/390 solutions that one might typically find on Unix or Intel based boxes.

"Linux is often said not to have the necessary support services and applications at that space to be a serious player," adds Garth Issett, vice-president of integrated technology services for IBM Canada.

As an example, IBM is offering a Server In the Box for file sharing among 250 people. Internet In A Box will let someone quickly set up a Linux sever to act as a gateway between the Internet and the network. It comes with the standard SMPT POP3 support, firewall and other services that one would need for an Internet server.

"Overall this is an opportunity for IBM to say they have Linux from top to bottom," says Dan Kusnetzky, vice-president of systems software for IDC. "They have invested heavily in Linux databases, tools, middleware, training, customer support, programming and they are poised to hop on the Linux bandwagon and do well on it."

While Kusnetzky does not expect IBM to sell a lot of S/390 systems with Linux right away, but he does expect Linux-based S/390 systems to be useful for companies looking to run enterprise applications on a single machine instead of across several machines.

Paul McNamara, vice-president of business development for Durham, N.C. based Red Hat Software Inc. says the IBM announcement will be particularly useful for Linux developers looking to grow into the database and systems management market—places where Linux has until now not been a strong player.

"There are still some hold outs who question whether Linux is a ready for prime time operating system," McNamara continues. "This S/390 announcement should cause those people to reevaluate their thinking."

But what is likely going to make IBM's move to put Linux on its S/390 products successful will be the services it offers around its product.

"If you just put Linux out there on its own, you will just get some of the early adopters and the innovators, but that is it," suggests Allan Freedman, research manager for servers and workstations at IDC (Canada) Ltd. in Toronto. "It is a margin issue and a revenue issue. If you are just selling an operating system, you can only get so much for a free operating system, as ironic as that may sound. It is in the maintenance and support surrounding it that you will make your margins." ❑

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Wireless networks

Continued from page 69

els) and any mixture of RangeLAN2 PC, ISA, or PCI cards. RangeLAN2 is based on the OpenAir standard and not Ethernet. It is interoperable with products from about two dozen vendors who are members of the Wireless LAN Interoperability Forum

RangeLAN2 provides speeds of up to 1.6 Mbps but as many as 15 access points can be aggregated to provide about 21 Mbps of bandwidth, which is capable of handling hundreds of users (Although 15 times 1 6 equals 24 21 Mbps is the real world maximum that can be obtained or so an honest Proxim engineer told me) RangeLAN2 users are added to the wired network once the access points are connected via cable to the Ethernet or Token Ring hubs The wireless users can do everything that other users can do although for some applications the slower connection speed will be felt.

RangeLAN2 products have a range of up to 150 m (500 ft) indoors and 300 m (1,000 ft.) outdoors In the real world, though, there are many obstacles to this kind of performance. In a typical office, even if all of the distances are well under 150 m, multiple access points will probably be required if users want to remain connected as they wander throughout the building

The home and SOHO product line is called Symphony Products in this line cost less, but work in much the same way Both lines have similar benefits, such as the elimination of the cost and mess of cabling Some homes and buildings are either difficult or impossible to wire and going wireless is the only way to build a network. Historical buildings, and those containing asbestos or plaster walls fall into this category Some environments call for the elimination of wires on aesthetic grounds. Examples include conference rooms, lobbies lunchrooms, customer briefing centres, and executive suites on the business side and most rooms in the home

Wireless networks will allow doctors and nurses to access and update medical records as they move from patient to patient

In a university environment students could access information in the classroom, and as they move around the campus between class and library

The wireless LAN market has probably already exceeded the US$500 million mark and is growing fast. What I experienced at TechEd will very rapidly become commonplace, because the need exists and price drops are bringing the technology within reach of more homes and businesses.

3Com cuts the wires

One of the traditional networking equipment manufacturers is 3Com so it was a big deal early this year when it introduced the AirConnect family of products, which provides an 11 Mbps wireless LAN solution, based on the recently ratified IEEE 802 11b specification.

Currently, there is only a PC Card option for client computers, but a PCI card for desktops is on the way Each Access Point (wireless hub) supports up to 63 simultaneous users, and provides coverage within a 100 m (328 ft) radius, in a typical office environment. Additional Access Points can be added so that really large networks consisting of a mixture of wired and wire-free users, can be built.

The PC Card fits into a standard Type II 16 bit slot, and requires that the client OS be Windows 95B, 98 NT 4 0, or 2000 Windows CE is also supported (Proxim also supports Windows CE, and will soon support Microsoft's new Pocket PC platform.)

The AirConnect solution integrates into

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any Ethernet network but there is no option for Token Ring networks. The installation was very easy in my office but I have no experience with more demanding situations involving larger distances and more sources of interference. 3Com provides a Site Survey tool to help network planners map out the proper placement of one or more Access Points. It is useful for small networks, too. The software is installed on a notebook with an AirConnect PC card and the computer is carried around the office generating signal strength and other data for a report that can be used to fine tune the position of the Access Point.

The AirConnect products work well in a SOHO environment but are priced for the corporate market. Price at time of writing, was approximately $2,200 for a starter pack, which consists of a single Access Point and three PC Cards. Additional cards are $265 each. That may seem high, relative to wired Ethernet costs, but it represents a significant drop from a few months ago. Further price drops, which are just a matter of time are all that's needed for this technology to really take off ❑

Piracy still rife on the world's oceans

NB—Ocean piracy is not just the stuff of story and history books. Outrage in the shipping industry at the alarming growth in piracy on the world's oceans prompted the creation of the IMB Piracy Reporting Centre. The center supplies investigating teams that respond immediately to acts of piracy and collect evidence for law enforcement agencies. Among the features on this site is a weekly review of reported acts of piracy.

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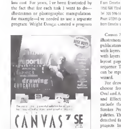
Canvas 7 SE an all-in-one graphics tool

Deneba's lite package offers tools for photo editing, vector illustration, desktop publishing, Web design and Web animation

By Nathan Segal

Canvas 7 SE (Standard Edition) is a condensed version of Canvas 7 Professional. The SE variant is designed for small business and graphics generalists who want to create quality drawings, newsletters, flyers, and graphics for a low cost. For years, I've been frustrated by the fact that for each task I want to do—illustration or photographic manipulation for example—I've needed to use a separate program. Wright Design created a program to handle vector illustration and photo manipulation, but Deneba has gone even further by creating a program with which you can edit photos, create illustrations, lay out pages for print, create Web pages and Web animations.



Canvas 7 SE
From Deneba Software
1150 NW 72nd Ave., Miami, FL 33126
Tel: 305 596-5644 http://www.deneba.com
Price: US$95 (with printed manual), or US$85 (download from Deneba site without manual)

Canvas 7 SE creates four document types: illustrations are one-page layouts with layers; publications comprise single or facing pages with layers; presentations are a slide format with layers; and animations, for which each layout page is one frame of the animated sequence. To create a new document, settings can be input manually or with the aid of a wizard.

For drawing, there a number of tools to choose from: Selection, Line, Rectangles, Oval and Arc, Object, Paint, Text, Path, View, and Effects. Other options include the Opacity Slider, Strokes, Pen Ink and Fill Ink palettes. The toolbars can be detached for use on different projects. In Canvas you can draw with your mouse or double-click where you want to place a shape, which opens a dialogue box, allowing you to enter the desired dimensions for the shape and to choose whether the object will be drawn from the centre, side, or corner.

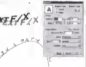
Missing from Canvas 7 SE is the Direct Selection tool (for easily selecting the shapes in complex drawings), precise control over colour blends and a snap constraint option.

A new feature, Sprite Effects lets you apply image editing filters and effects like Blur, Noise, Twirl, and Plug In effects to any object, including text and vector illustrations. The Sprite Effects palette allows you to build effects layers that can be adjusted with sliders or by numerical entry. Also, you can drag layers to different positions in the palette, for different effects. Blending of layers is also possible, much like Photoshop, letting you create custom effects. My images were quite smooth in appearance and on the whole, the Sprite Effects worked really well.

Canvas Sprite: A tutorial file with Blur and Noise applied.

For Page Layouts and Typography you can make use of Auto Correct, an Interactive Spell Checker and Text Ruler. Formatting options include Leading and Kerning with basic controls like Loose, Tight, etc. Other options include Column Sections, Master Pages (similar to PageMaker), Shared Layers and effects like Text on a Path, Text Wrap and Repel, Extrude, Shadows, Flip and more.

When it came to using Text Wrap around an object, I found there was a lack of fine control. I would have liked to see a function where the text could be moved in relation to a path around the object, as in Adobe InDesign. With the Placing Text on a Path feature, the process was straightforward, but I didn't like the editing tool, which consisted of a small icon that appeared next to the text. I found it hard to see on the screen and tricky to use. A dialogue for numerical entry with spinners would have been a better choice.



A sampling of type effects in Canvas.

Canvas has an extensive array of painting and retouching tools, such as the Cloning, Crop, Eraser, Dodge, Airbrush, and Burn tools, much like Photoshop—and with similar names for the tools and functions in many cases. Canvas has its own version of Layers in the Document Layout palette. You can perform complex retouching of images and there are a few handy tools available offering an automatic process for removing borders from photos with a single click and soft cropping which lets you undo crops instantly if you make a mistake. I was disappointed with the Masking capabilities, though. It limits you to manually painting in your masks, or to selecting areas using the Magic Wand tool. Unfortunately, there are no wizards for masking images as there are in Photoshop 5.5.

Canvas Mask: A sample image with masking in process.

For creating Web pages, layouts can be linked and output using the Web Publishing Wizard or by simply saving the file in HTML format. The Wizard is a good approach for the novice though it lacks flexibility for an experienced Web designer.

For GIF animations, each page of a layout can be used as one frame of the animation. Output options include Auto Crop, Anti-aliasing, Interlacing, Looping, Transparent Backgrounds, Individual Palettes per Frame, and Time. The Time option was somewhat disappointing—as you are limited to full seconds or longer. Also, I found that while the animation worked well in Netscape, the same animation wouldn't work under Internet Explorer, even though I downloaded and installed the current version.

While Canvas 7 SE offers a wide range of options it doesn't offer technical illustration tools, advanced typographic controls, Pantone or Trumatch four-colour separations, or spot printing. Also, technical formats like TGA, PCX, DXF and DWG are unavailable, though it does support file formats like TIFF, GIF, JPEG, EPS, CorelDraw, Illustrator, Photoshop, BMP, WMF and EMF.

For the small business owner or graphics generalist, Canvas 7 SE is probably enough. However, if technical tools or professional colour is important to you, I would recommend you choose Canvas 7 Professional instead.

Still, if you buy Canvas 7 SE and decide you want to upgrade later, you can do so for the difference in price.

One of the things I really liked about Canvas is having four programs built into one, eliminating the need to switch applications. Even with its limitations, I was impressed with what Canvas 7 SE could offer, and I consider it to be an excellent investment. I wish Deneba had been around when I first got into the graphics game. ❑

LiveMotion moves the Web

Continued from page 21

If you do a lot of Web animations, buttons and rollovers, LiveMotion is pretty stable in these areas and certainly will speed up your work.

If you want to do Web shows with more multimedia and user interaction, then LiveMotion is not appropriate and Macromedia Flash, Borland's JBuilder 3.5, Adobe's GoLive, Macromedia's Dreamweaver UltraDev, and HotMetalPro 6.0 are better choices.

If you are into complex graphical compositions wait until Adobe releases a 1.1 bug fix edition. In the meantime, Deneba's Canvas 7 and Wright Design 3.5 are very robust tools. (Canvas 7 has good vector, text, bitmap, transparency controls in a strong desktop publishing framework. Wright Design has pioneered graphical composition uniting vector, text, and bitmaps with advanced layering controls.)

LiveMotion is ambitious and a breakthrough product, simplifying graphic composition that has a time dimension with much easier, yet reasonably sophisticated animations. LiveMotion does not have the interactive and multimedia savvy of Flash, nor its programmability. But it has its own niche: easy to develop animations exportable either in the very slim SWF format or as more portable HTML plus graphics files. So watch for more and more Web sites to be set in LiveMotion. ❑

Jacques Surveyer is a consultant and writer. He can be reached at jbsurv@infocamp.net.

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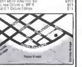

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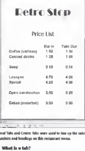
Tabs and indents

Tabs are one of the most powerful yet misunderstood functions in a word processor. This month, we take some of the mystery out of using them.

How do you add a column of numbers to add to a Word document? In the old days, you'd use the space bar on your typewriter to place the numbers neatly on the page. However, this just doesn't work with a word processor—as you'll already know if you've ever tried to line up numbers using spaces. The wiggly result looks anything but professional!

Even if you do manage to line up the numbers on the screen, chances are they won't look like that on paper. Worse still, if you have to edit a number, it could collapse the alignment of the list. The answer to the dilemma of how to line up numbers is to use tabs. Tabs are similar to the old tab stops you would set on a manual or electric typewriter to line up text and numbers. This month we'll look at why and how to use tabs and how you can set your own tabs to meet your own specifications. We'll also take a look at two close relatives of the tab indents and hanging indents and I'll share some secrets guaranteed to make you a Tab Master (or Mistress!)



Retro Stop

Price List

	Eat in	Take Out
Coffee (various)	1.50	1.30
Canned drinks	1.25	1.00
Soup	2.50	2.10
Lasagne	4.50	4.00
Ravioli	4.50	4.00
Open sandwiches	3.50	3.25
Cakes (assorted)	3.50	3.00

Decimal Tabs and Centre Tabs were used to line up the columns of numbers and headings on this restaurant menu.

What is a tab?

A tab (or tab stop) is an invisible marker on the screen that your cursor stops at whenever you press the Tab key. If you've never used this feature, open a new Word document and press the Tab key a few times. You'll see the cursor move across 1.27 cm (.5 in.) at a time—which is Word's default setting for tab stops. If you display the Word ruler (View, Ruler) you'll see the tab stops marked along the bottom line of the ruler.

Try the following short exercises to learn more about using tabs—they work with versions of Word from 6.0 on. Open Word, begin a new document, and make sure the Ruler is displayed.

Exercise 1: Left Tab

Press the Tab key once, type "Monday" (no quotes) and press Enter. Repeat this step, typing each of the remaining days of the week on a different line. Notice that the column of days has a neat left edge. This is because the tab stops—which are preset in Word—are Left tabs so they line up the tabbed text along its left edge.

Exercise 2: Right Tab

In the top left corner of the window you'll see the Left Tab marker, which is shaped like a capital letter L. Click it until it changes to a mirror image of the letter L—this is a Right Tab. Now click in the ruler line at about 6 cm (2.5 in.) to insert a Right Tab at 6 cm—notice that all the existing tabs to its left are removed in this process. Now repeat Exercise 1, and type the days of the week—you'll see how the effect is different this time. Now the block of text will

Continued on page 96

Linux for Newbies: Part 13

Home networking: Part 2

By Gene Wilborn

Last month, we set up a basic home network with NICs (network interface cards), hub and cable, and assigned a private IP address range (192.168.1.0-255) to our network. We then named our machines and added the host names and corresponding IP addresses to the hosts tables in Linux and Windows. We tested that everything worked using ping to check for connectivity and name resolution.

This month, we'll set up Linux as a server on our shared Linux/Windows network. We'll implement a solution called Samba, a versatile open source product that allows us to integrate our Linux and Windows computers into a single seamless network.

Using Samba, Linux directories can appear in the Network Neighborhood window of all your Windows machines. Samba is based on SMB/CIFS (server message block/common Internet file system) protocol, a Microsoft networking protocol that goes back to the early Microsoft LAN Manager days and is still the foundation for Windows NT/2000 networking. Samba allows Linux to provide file and print services, mapping Linux directories to Windows drive letters by creating "shares" for directories and printing devices. With Samba, Windows users can share a printer attached to a Linux box, and Linux users can share a printer on a Windows box.

Samba can be used peer-to-peer style, as with a Windows 95/98 peer network, or Samba can become an authenticating server for the network, in the manner of Windows NT or 2000. In the business world, Samba on Linux is frequently used as an NT server replacement, acting as a Primary or Backup Domain Controller.

On a home network, Samba provides a way for you to set up a central Linux server for file storage, backup, printing, and, as we'll see next month, a central gateway to the Internet.

Installing Samba

Installing Samba is remarkably easy. Samba comes as a standard part of most Linux distributions and is usually installed by default on Red Hat Linux. The main thing to be aware of with Samba is that you should always use a very current release, especially if you intend to include any Windows 2000 machines on your network.

The Samba packaged with Red Hat consists of three main RPMs (Red Hat Package Manager): samba, samba-common, and samba-client. At the time of this writing, the most recent version of Samba on the Red Hat site is 2.0.6-9. Find out which version you have installed by typing `rpm -q samba` at the command line.

If you don't have Samba already installed, obtain the latest RPMs from the Red Hat site

Continued on page 106

The Visual Basic Tutorials: Part 13

VBA III: Finishing the form

Developing dialogue boxes that can customize and extend the power of Windows applications has been the theme of the recent series of Visual Basic for Applications (VBA) tutorials. At the same time we have tried to use components and coding that will be useful in a strict Visual Basic (VB) context as well.

In this tutorial we conclude the creation of the Message and Meeting Form, which we are developing in Excel but shall also install in Word, Corel Presentations and Project 2000 (the key applications used in our project). In the last tutorial we developed the Message To tab/page that allowed us to choose who we wanted to send a note or notice of meeting to using a standard list of colleagues. This tutorial will complete the Contents and Meeting Options tabs/pages, then install the dialogue in several Windows applications.

Fig. 1 shows the layout of the new pages. The Contents page is actually quite easy to do. In Excel, start VBA (Tools | Macro | Visual Basic Editor). Note that Excel may not have a common .DOT file like in Word so you may have to load the Excel Worksheet containing your macros.

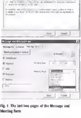


Fig. 1 The last two pages of the Message and Meeting form

Continued on page 90

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VBA III Finishing the form

Continued from page 88

Click on the Contents tab/page Then add a textbox on the top of the page Change the textbox font setting to 10 pt bold Add a label and change its caption to Subject Also change the label font to the same 10 pt bold setting. Now add a second textbox (rename it Body) and stretch it so it fits the entire page but not covering the footer Change the Multiline property to True and the ControlTipText to "Type CTRL+Enter for new paragraphs." This completes the visual layout of the Content page of the dialogue.

Now we will program a Send key to send out messages with this Subject and Body The following code segment does it

```
Dim appOL As Object, itemMail As Object
Dim sTo As String,   As Integer
 Code that creates an e-mail message
 using Microsoft Outlook
Set appOL = CreateObject("Outlook.Application")
Set itemMail   appOL.CreateItem(0) olMailItem = 0
With itemMail
For   = 0 To Lb2.ListCount   1
sTo = sTo &
Lb2.List(i) & " "
Next i
 .To = sTo
.Subject = SubjectText.Text
.Body   BodyText.Text
.Display
End With
```

Note again that if the Lb2 list is empty no add five checkboxes just below the command button, changing the captions to Whiteboard, Flipchart VCR, Projector and Podium. Now we can add the programming for the Meeting Equipment Option command button as follows.

```
If CheckBox1 Value And CheckBox2 Value And
CheckBox3 Value And
CheckBox4 Value And CheckBox5 Value Then
Rem if all boxes are checked the clear them
CheckBox1 Value = False
CheckBox2 Value = False
CheckBox3 Value = False
CheckBox4 Value = False
CheckBox5 Value = False
Else
Rem otherwise check all the boxes
CheckBox1 Value = True
CheckBox2 Value = True
CheckBox3 Value = True
CheckBox4 Value = True
CheckBox5.Value = True
End If
```

The code works as follows: if all the buttons are checked, then all the checkboxes are turned off; otherwise all the checkboxes are turned on. Next, add a text box just below the checkboxes for any other equipment needed for the meeting We will now add the handouts textbox and a spinner control next to it as illustrated in Fig 1 Set the spinner's Max. value to 10 and its Min value to 0 Also add a label with the Caption, "No of handouts." The code for the spinner is quite easy

```
Spin1Value = x
Handouts.Text = CInt(x)
End Sub
```

As soon as the spinner value changes we update the Handouts.Text value Whenever the Handouts value is directly changed we must update the spinner value—the two constantly remain in sync So now all we have to do is add the date picker control and the meeting place combobox. The date picker is not by default in the Toolbox so we must load it using the TOOLS | ADDITIONAL CONTROLS menu item (make sure the toolbox is active or the Additional Controls menu item will be grayed out) Scroll down to the Microsoft Date and Time Picker Control and be sure to check the box before clicking OK The icon for the date picker control now appears in the Toolbox. Click and add it to the page, changing its name to Meetdate.

Note the size of the mscomct2.ocx is 640 KB This is a pretty hefty price to pay for getting one date; however given the number errors associated with date fields, all you need to have is three or more date fields and the ease of use and reduced number of mistakes quickly make it worthwhile

Now we need to update the Sub SendBtn_Click() for the new Meeting Options Here we are using the following rule if the Meeting Place combobox is blank then no meeting data whatsoever is added to the messages sent out Since you control the program you can change this behaviour to whatever suits you. Perhaps checking if any

```
With itemMail
For i = 0 To Lb2.ListCount   1
sTo = sTo &
Lb2.List(i) & " "
Next
 .To = sTo
.Subject = IIf(Meetp.ListIndex >= 0, "Meeting in " &
Meetp.Text _
& "about " "") & SubjectText.Text
 .Body = IIf(Meetp.ListIndex >= 0, "Meeting time " &
Format(Meetdate  "MMMM dd yyyy") & Chr(13), "")
& IIf(Meetp.ListIndex >= 0, "Meeting place " &
Meetp.Text & Chr(13), "") _
& IIf(Meetp.ListIndex >= 0, options, "") & BodyText.Text
.Display
End With
```

Note how the Subject and Body of the mail message have been changed to reflect the Meeting Options, if any Also note the use of the IIf() Immediate If function. Use of IIf() is a matter of taste—some people think it makes the code clearer than using complex If Then ElseIf clauses You be the judge and code accordingly

So, after testing we have a new Message and Meeting dialogue that we can export to Corel Presentations, Microsoft Project and Microsoft Word by just choosing FILE | EXPORT FILE in VBA and saving the form with a unique name (I used MnM) Then go into any of the programs and start up VBA and using FILE | IMPORT FILE, it is easy to add the new command to almost any VBA enabled application.

In our very last tutorial on VBA, we shall look at an alternative method, which also allows you to add a secure digital signature to our component. But for now we have accomplished several things

1 Learned how to develop a multi-page component
2 Made it general so it can be used in just about any VBA application.
3 Tried some new GUI controls in the process.

Congratulations! We are ready to tackle our big assignment, making our own Windows Wizard. ❑

Jacques Surveyer is a consultant This tutorial, and the previous 12 in the Visual Basic series, can be downloaded from his Web site at http://www.inforamp.net/~jbsurv.

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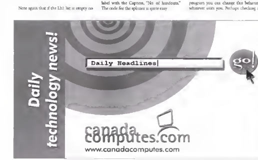

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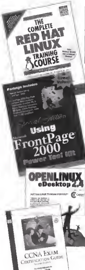

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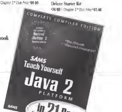

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Great Books Are Just The Beginning

Job title: Product design engineer

By Ross MacDonald

There are a lot of variables to the job description of a product design engineer—not the least of which is the business the potential employer is in. However, common tasks include designing items according to client specifications (or often determining or altering specifications to meet the client's needs), creating a 3D computer model of the item, programming machine or molding tools to manufacture a prototype based on the computer model, then overseeing the final manufacturing process. Many design engineers are also expected to determine budgets for specific projects as well as suggest the best materials for final manufacture.

The training

Though there are multiple paths to becoming a design engineer, the one invariable is post-secondary education in engineering. Those with a degree from an accredited university in the fields of mechanical, industrial or electronic engineering are virtually guaranteed success in finding employment. Graduates in similar fields from colleges and technology institutes may also work their way toward the position but would likely be hired in a lesser role until they acquire much more experience.

Getting hired

Lee Ann McGuire is manager of human resources at Pathway Design and Manufacturing Inc., a comprehensive facility in Vancouver, B.C., that focuses on the design, engineering and manufacture of specialized components for a variety of clients including Ballard Power, a fuel cell developer. When hiring product design engineers, McGuire looks first for the appropriate degree or diploma, then for the variety of skills and/or experience demanded for a particular job.

"Many applicants, especially from other countries, don't have a lot of computer experience," she says. "And we wouldn't even consider anybody for a design position who hasn't got that. That's first thing we look for. Not just CAD [computer-assisted design], but also programming ability and an interest in computers."

Fortunately, nearly all graduates from university level engineering programs now have the necessary facility with computers. However, because of the customized nature of Pathway Design's business, graduates from mechanical engineering or industrial design programs are preferred. And recent school grads are actually welcomed.

> Every time we design something it's an item that has never been made before. So having 15 years' experience designing other things has less utility in the high-tech design industry.
>
> *— Lee-Ann McGuire, Pathway Design*

"We like applicants who have a broad skill set but not necessarily experience, because every time we design something it's an item that has never been made before. So having 15 years' experience designing other things has less utility in the high tech design industry," McGuire explains.

As with nearly all other digital careers, the soft skills are considered as important as technical know-how. Since design engineer is largely a supervisory position, personality, communication and people skills are scrutinized just as closely as academic background. "The design engineer works very closely with the sales people and the technical people as well as the clients, so we are very careful that the personality of the applicant fit into the team environment," says McGuire.

The job

Ian Archibald is a mechanical design engineer at Pathway Design. In describing his daily tasks, Archibald emphasizes that good communication with the client is where it all begins. "Typically a client will describe what they need but it may not be possible to make it exactly as described," he says. "So what you have to do is establish firmly with the client what the item has to do, what it has to look like, and what material it has to be made from. Often these are all negotiable and we may know more than the client about what materials are available and more practical for their application."

The next step, says Archibald, is to create a 2D or 3D model of the item using a modeling program.

"Then you have to decide how you're going to go about making it. That's where you go into a CAM [computer-aided manufacturing] package that allows you to convert the model into one or several tool paths you can then feed to a computer controlled machine—a lathe or milling machine or something—to cut the part out."

Archibald says a typical day starts out with talking to a client in the morning, spending a few hours designing something in a 3D CAD package, then another few hours programming the machine paths. He might actually work on a machine to cut the part out.

"There are some companies in which the design engineer acts more like a supervisor over other staff who perform each of the steps," adds McGuire. "Some companies are only machine shops, or only design shops or only manufacturing outlets. But our business model has the design engineer involved at all stages. It makes for a better product. It's like a soccer coach who has his defenders play goal once in while; you can be a better defender if you know what the goalkeeper has to do."

Archibald has noted some major differences between what he thought the job would be like when studying and what the work actually entails—most notably that real world problems don't often match the theoretical ones faced in school.

"When you actually start the job, you find that the problems you face are never as well defined as they are in school—there are always more options available and there is

Continued on page 98

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Tabs and indents

Continued from page 88

appear aligned along its right edge, leaving the left edge ragged.

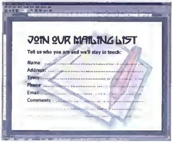
Exercise 3: Centre Tab
Now remove the Right Tab stop from the ruler line by grabbing it with your cursor and dragging it into the editing window to discard it. You'll use a Centre Tab this time, which you can get by clicking the tab marker in the top left of the window until it resembles an upside down T, then click in the ruler line at about 6 cm (2.5 in.) to add the Centre Tab there. Repeat Exercise 1 and notice that this time the text is centered around the tab stop

Exercise 4: Decimal Tab
Drag the Centre Tab stop away from the ruler line with your cursor to discard it This time we'll use the Decimal Tab. To get this, click the tab marker in the top left of the window until it resembles an upside down T with a dot to its right Click in the ruler line again at about 6 cm (2.5 in.) to add the Decimal Tab there. Repeat Exercise 1, but this time type the numbers 2.5 20.05, 200 005, 2,000.05, 10,000 Notice that the numbers are all automatically lined up with their decimal points in a vertical line under the tab maker Use the Decimal Tab when you're typing numbers that contain decimal points, such as dollars and cents. The Decimal Tab ensures that the decimal points in the numbers are always neatly aligned

Having fun with tabs

Now that you understand the basics of using tabs, it's time to see some neat effects you can create very easily using them.

Exercise 5: Tabbed lists
The credits that role after a movie or TV show are often formatted with a simple Right/Left Tab combination that provides a neat way of laying out a list. You can use it to create a list of say employees and their job titles. Open a new document type a title for your page and press Enter. Now add a Right Tab at 6 cm (2.5 in.) and a Left Tab at 7 cm (3 in.) To type a person's details, press Tab type the person's job title, press Tab type their name and press Enter The effect you'll get is a nicely designed list. If you have two people who fill the same job title, simply press Tab twice and type the next name.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Use Right Tabs with dot leaders to create a simple fill-in form.

Exercise 6: Creating fill-in forms
If you've ever tried to create a form for someone to fill in using Word you'll probably have found that adding lines for them to write on isn't very easy Luckily tabs are the answer to this problem too. However, the tabs you need can't be created from the Ruler, instead you must use Word's menus to create tabs that have leader characters These are dots, dashes or a solid line that appears before the tab stop. They're ideal for creating fill in forms and mail-in coupons.

In a new document, create a dot leader tab by selecting Format, Tabs In the tab stop position box type 10 cm (4 in.) select Right, select 2, click Set, then click OK This sets a right tab with a dot leader 10 cm in from the left page margin It also removes any existing tabs to the left of the tab you've just created. Now type Name: and press the Tab key to create a dotted line to the tab stop at 10 cm Press Enter to begin a new line Type Address, and press Tab and Enter and repeat this for all the information you want to obtain from your form If you want a row of dots without any text prompt, simply press Tab, then Enter on a new line

Exercise 7: Checkboxes
You'll find that it's easier to get people to fill in forms and surveys if all they have to do is tick a box. You can create a neat survey form in Word if you use checkboxes for the answers and line these up using tabs You'll find a good checkbox character if you choose Insert, Symbol, then from the Font drop-down list select Wingdings, choose the third character from the right in the third row on the screen Select Insert then Close. Line up each checkbox on a Left Tab and add one space between the checkbox and its following text for a neat result

Exercise 8: Multiple columns
You can create multiple columns of numbers or text in much the same way you created your first list of numbers. Count the number of "columns" you have (not including the first column as this will usually be typed against the left margin of the page) For each column you need, create a Left Tab (or a Decimal Tab if you're typing numbers) on the ruler line. Make sure you allow enough space between each tab to accommodate the largest entry for that column. Type the first piece of text, press Tab, then type the next. Continue in this way across the page until you finish the last entry and press Enter to begin a new line for the next row

Why tabs are vital

So far you've seen how to use tabs for lining up numbers and text. But why you may ask, can't you do this with spaces like you can on a typewriter? The answer is that you can't reliably line up text or numbers using spaces in a word processor because of the fonts you're using. On a typewriter all the letters take up exactly the same horizontal space—so a lower case l a capital M and a space are all the same width. The typewriter font is a monospace font and monospaced fonts aren't generally used on computers. This said, you may find you have a few monospaced fonts in your collection—Courier is a popular example of a monospaced font

Most of the other fonts on your computer, including Times New Roman and Arial, are proportional fonts With proportional fonts each letter, number, and the space take up different amounts of horizontal space on the page You'll find your work looks more professional when it's created in a proportional font. The downside is that characters don't all take up the same amount of space so it's almost impossible to line text and numbers up neatly unless you use tabs.

Indents

A close relative of the tab is the indent Using indents is one way to move an entire paragraph in from the left margin a set amount of space.

Exercise 9: Creating Indents
Create an indented paragraph by placing your cursor inside a paragraph of text and click the Increase Indent button on the Formatting toolbar (display this toolbar by selecting View Toolbars, Formatting) Every time you press the Increase Indent button the paragraph will move to one of the default tab stops (every 1.27 cm or .5 in.) or to a tab stop you've created You can undo the indent by clicking the Decrease Indent button

Continued on page 98

meet
Wayne Flooters

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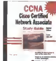

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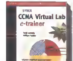

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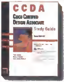

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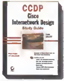

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Tabs and Indents
Continued from page 96

Hanging indents

A hanging indent is a variation of the indent where the first line of a paragraph begins at the left margin and the remaining lines are indented. Traditionally, they're used for a bibliography in an assignment or term paper but you can use it for any series of information in paragraphs when you want to draw attention to them

Exercise 10: Hanging indents
Create a hanging indent by placing your cursor inside a paragraph of text and choose Format, Paragraph, select the **Indents and Spacing** tab and from the Special drop-down list, select Hanging, then click Ok. You'll see the first line of the paragraph remains as it was and the subsequent lines are indented from the margin.

Secrets of the Tab Masters (and Mistresses)

These hot tips will make you a true Tab expert

- Press Control + T to get a hanging indent, and Control + Shift + T to undo it.
- Press Control + M to indent a paragraph, Control + Shift +M to undo it.
- Tab settings are stored in the paragraph marker at the end of a paragraph (click Show/Hide¶ to see them) You can copy tab settings from one paragraph to another by copying and pasting the paragraphs ¶ marker.
- Want text justified left and right on the same line in Word 6/95 or 97? Place a Right Tab on the right margin, then type the left justified text and press Tab to type the right justified text.
- Want to stop using the tab settings and return to a standard formatted paragraph? Press Control + Shift + N to return a paragraph to Normal style (or choose Format, Style, Normal)
- Need to line up numbers in a table cell or column? Select the cell or column and add a tab using the ruler line. To use the tab in the table, press Control + Tab.
- Need to change the position of tabs in a piece of text? Highlight the text and use your mouse to drag the tabs into a different position on the ruler line. ❑

Helen Bradley specialises in writing hands-on tutorials. Her columns appear regularly in a number of publications in the U.S., Australia, the U.K. and Canada. She also reports on the computer industry for Australian Radio. Contact Helen at helen@helenbradley.com.

Job title: Product design engineer
Continued from page 93

never only one right way to get things done. All the training typically focuses on the technical aspects of 3D drafting or 3D machine programming, which are vital skills but only a small part of the job."

Archibald says the bulk of the work for a design engineer is in the area of project management—exploring alternatives, setting up budgets, making sure the necessary materials are available. He likes the fact that many universities now have co-op programs (a combination of classroom and work experience) to give students an better idea of what the job is like

"But even within the structured classroom environment, it would help if projects were treated more realistically by posing a problem less rigidly defined," he says "The teacher or supervisor could act as a client and work with the students to clearly define the project themselves, explore what options are available, what methods you want to use to make an item, the materials you want to use. These are the sort of things that are never rigidly fixed in real life."

Like McGuire, Archibald emphasises the importance of the soft skills. "Often your role is as project manager" he says. "Typically, the design of any reasonably intricate product involves the marriage of a number of different fields. No one person can do everything. So often you're acting as project manager, making judgement calls and bringing in experts where your own knowledge is lacking. So, being able to coordinate several people and oversee a project is very important."

Archibald sees soft skills being nurtured, ironically, in classroom situations that students might find unproductive "Typically students complain when they're forced to work with a slacker for example, but that can just as easily happen on the job Being able to coordinate different personalities and different skills and get as much as you can out of each person is one of the challenges inherent to the job in product design engineer" ❑

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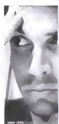

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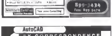

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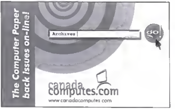

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Vancouver company develops video on demand for email, Web

VANCOUVER—Destiny Media Technologies Inc (http://www.destiny-software.com) says it has launched the prototype implementation of a new Java based streaming video product, called Video Clipstream (http://www.clipstream.com) which allows Web page designers to embed streaming video directly into a Web page or HTML-compliant email.

Paul Andreola a spokesperson for Destiny Media, says the product works at a variety of bandwidths from basic modem speeds to high speed broadband allowing the entire range of Internet users to receive a "quality video experience." Andreola confirms that the greater the bandwidth the more frames per second are received by the viewer, giving the video a less jerky appearance.

According to the company, the Video Clipstream product is based on Destiny Media's proprietary compression technology, and has the added benefit of providing a simple way to add streaming video on demand to a Web site.

The company says its technology will assist in the convergence of various types of media on the Internet. According to Steve Estergaard the Destiny Media's chief executive officer it will also allow for true video on demand with a picture quality close to traditional television

Andreola says competing video streaming products from Microsoft, Apple and Real Networks typically require the user to download and configure third party software plug ins which is not required by Video Clipstream.

As well since Video Clipstream uses standard HTTP (hypertext transfer protocol) and does not rely on a proprietary server its content can stream through "friendly firewalls"

Destiny Media says that because the technology is Java based it gives media content owners access to a much larger audience than all current media player users combined.

Citing data provided by Media Metrix Destiny Media says only 31 percent of consumers have the Real Networks player 18 5 percent have the Microsoft Media Player and 8.3 percent have a Quicktime player

However, 95 percent of Internet consumers currently use a Java-compliant browser allowing them to run Video Clipstream content now

Andreola says that an example of how the new technology could be used is in the development of multimedia email. Video Clipstream, he said permits the creation of streaming video email that can be downloaded in a few seconds. Although the video-enhanced email can be downloaded quickly many hours of streaming video can be contained within that time frame according to the company

Destiny Media says that multimedia email is a popular way for businesses to communicate with customers because it is a more effective way of gaining and retaining a consumer's attention

Email is not the only medium in which the technology can be used according to Vestergaard

"Video Clipstream will allow television-quality Web commercials that will eventually make today's banner ads obsolete" he says.

Relying on a market forecast released by the research firm DFC Intelligence Destiny Media says broadband video is expected to grow at close to double-digit rates over the next two years By 2002 Destiny Media predicts that a total of 240 million streams will be served to broadband users.

Video Clipstream is expected to be available commercially by press time. The retail cost has not been determined as yet, but Andreola says it would be "less than the competition" ❑

Photos with a buzz

NB—A bevy of sites are jostling to serve as home base for the Internet's digital photographers, serving up image-editing tools and helping the shutterbugs share their pictures with others. Streetwise Software's PictureBUZZ.com does all that and adds a new twist to the online picture-postcard offering with technology that delivers images to users' desktops each morning without the need for email or attachments. Daily BUZZcards are images from stock-photo libraries and can be chosen from such categories as parts, lifestyles, natural history and travel.

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B.C. [illegible] Local Users Group [illegible] provides a forum for the professional growth and education of its members through the exchange of solutions, ideas, and opinions. User group meetings are held the 3rd Wednesday of every other month at 6:30 p.m. [illegible] For further info please call [illegible]

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LOTUS NOTES see "Pacific Notes User Group"

MACINTOSH COMPUTER SOCIETY Meetings for members and visitors include PD copy sessions. General meetings 2nd Wednesday of each month; Beginner's meetings 3rd Wednesday of each month 7:30 p.m. at Surrey Conference Centre. For messages and information call [illegible]

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POWER BUILDER User group being formed. Meetings are planned for first Wednesday. To enroll call Perform System Developers or voice mail [illegible]

SQL SERVER User group being formed. Meetings are planned for first Monday. To enroll call Perform System Developers at voice-mail [illegible]

[illegible] COMPUTER B.C. [illegible] Users Group every Thursday [illegible] information call [illegible]

TEENS IN VANCOUVER USER GROUP For teens under the age of 18 interested in doing computer related projects regularly (WWW, programming, games, anything). The main goal is to share computer knowledge and to make friends. If there are any homeschoolers interested that would be great. If interested please call [illegible]

VANCOUVER AUTOCAD USERS SOCIETY 1st Wed. of the month 7:30 p.m. B.C.I.T. [illegible] Contact Frank Zander [illegible]

VANCOUVER DELPHI DEVELOPERS ASSOCIATION meets once a month at the [illegible] Head Office, on West 8th Ave [illegible] The meeting is usually on the second or third Week of the month. Please check website for details. [illegible] The purpose of the group is to provide a common and regular forum for Delphi developers to get together and discuss Delphi related issues. Admission is free and all notices are sent via e-mail. To have your name added to our distribution list please send your complete contact information to [illegible]

VANCOUVER [illegible] USER GROUP [illegible] meeting time and location [illegible]

VANCOUVER GEOGRAPHIC INFORMATION SYSTEMS USER GROUP Meetings are held on the 3rd Wednesday of each month September through May, at [illegible] for information

VANCOUVER NETWARE USERS GROUP (VNUG) is an official user group recognized by the Network Users International Assoc and supported in part by Novell. Meetings are held on the third Wednesday of every month at [illegible] Computer Training Centre, Hong Kong Bank Building [illegible] West Georgia Street. All aspects of the networking environment are discussed and presented with emphasis on the Netware network operating system. The workshop begins at [illegible] buffet dinner at [illegible] Q&A session followed by a presentation ending at around [illegible] Member, non-member and student pricing applies to the workshop and/or dinner. [illegible]

[illegible]

VPCUS [illegible] for details and schedule

THE VAN[illegible] Users Group is an independent non-profit [illegible] information exchange about Microsoft SQL Server [illegible] meetings starting Thursday January [illegible] more information visit our web site [illegible]

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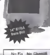
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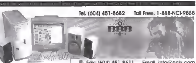

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Home networking: Part II

Continued from page 88

(http://www.redhat.com) or a mirror site and install them either using a graphical RPM utility or from the command line as root:

```
# rpm -Uhv samba*.rpm
```

Basic Samba settings

The key to configuring Samba, after it is installed, is the file /etc/smb.conf. As with most Linux configuration files, smb.conf is a text file that you normally configure using a text editor. You are also able to configure Samba using the Linuxconf utility, or, as we shall see later, with SWAT, a Web-based admin tool.

The smb.conf file resembles the .ini files that were common as Windows 3.1. The file consists of sections, or stanzas, with section names surrounded by brackets, e.g., [global], [homes], [printers] and configuration information underneath each section. The configuration parameters use the format parameter name = some value, e.g.,

```
# this tells Samba to use a separate log file for each
machine
# that connects
  log file = /var/log/samba/log.%m

# Put a capping on the size of the log files (in Kb).
  max log size = 50
```

White space is unimportant, and comments are allowed. There are dozens of parameters that can be adjusted and set in this file, but for a home network, a basic setup is all that is required.

First, if you're going to run a simple peer-to-peer network, you need a Workgroup name. If your family name is Smith, for example, you may want to name your workgroup SMITH. This is set as the [global] section as workgroup = SMITH. You then need to define this group under Start, Control Panel, Networks in all your Windows machines.

Users on a home network normally authenticate to Samba by their Linux login name (or ident) and password. This means you need to keep your Windows ident and password in sync with your Linux ident and password. The default setup is to give a Windows user access to his or her Linux home directory. This is set in the [global] section as security = user.

For backup purposes, or for sharing a common download area, you may also want to create a Public share on your Linux box that all users may access by creating a [public] section, e.g.:

```
# A publicly accessible directory, but read only, except for
people in
# the "techie" group

[public]
  comment = Public Stuff
  path = /home/samba/common
  public = yes
  writable = yes
  printable = no
  write list = @techie
```

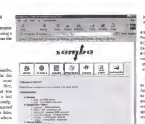


Fig. 1

You may personally have more than one Linux ident on your machine, but for convenience you might like all your variant names to have access to a single home directory, defined by the login name you use in Windows. Or you may want your home directory to be sharable by another member of the family. To do this, create a special section for your directory, e.g.:

```
[fred]
  comment = Fred's home directory
  path = /home/fred/
  valid users = fred fsmith janet
  public = no
  writable = yes
  printable = no
  create mask = 0765
```

Assuming you've already configured a printer or two to work under Linux, you can make printers sharable to Windows clients by setting load printers = yes under [global]:

```
# if you want to automatically load your printer list rather
# than setting them up individually then you'll need this
  printcap name = /etc/printcap
  load printers = yes
```

That's it! That's all the basic configuration you need to do to have a working Samba based home network. This setup would be insufficient for a larger business environment but it works fine for a home setup.

Advanced Samba settings

As you might expect, there are quite a few additional, optional configuration parameters that go beyond the basics. Because Samba is integrating two disparate worlds, Unix and Windows (including the new wrinkles in Windows 2000), it includes a number of advanced options.

There are, for instance, several methods of implementing security. In the basic, simple environment we have created for home use, passwords are sent in the clear, as they are for telnet and ftp sessions. In a tighter NT style environment, passwords are encrypted. You can set up Samba to either accept NT authenticated logins, or to use NT compatible encrypted passwords. Here are the pertinent parameters in the [global] section of the standard Samba smb.conf file:

```
# Security mode. Most people will want user level security.
See
# security_level.txt for details.
  security = user
# Use password server option only with security = server
  password server =

# Password Level allows matching of _n_ characters of the
password for
# all combinations of upper and lower case.
  password level = 8
  username level = 8

# You may wish to use password encryption.
Please read
# ENCRYPTION.txt, Win95.txt and WinNT.txt in
the Samba documentation.
# Do not enable this option unless you have
read those documents
  encrypt passwords = yes
  smb passwd file = /etc/smbpasswd
```

The Samba documentation referred to in the preceding section resides in /usr/doc/samba-[version]. If you elect to turn on encrypted passwords (a good thing), it is very important to read and understand how to create the special Samba password file that is required.

Security can be further enforced with the "hosts allow" parameter in the [global] section.

```
# This option is important for security. It allows
you to restrict
# connections to machines which are on your local net-
work. The
# following example restricts access to two C class net-
works and
# the "loopback" interface. For more examples of the syn-
tax see
# the smb.conf man page
  hosts allow = 192.168.1. 127.
```

Note that the preceding parameter only allows IP addresses from our home network to participate.

To participate fully in a Windows oriented environment, Samba also has settings for WINS, WINS proxies, and DNS proxies for resolving Windows machine names. There are even ways to set up Samba to supply Windows 9x "roving profiles."

Most of the advanced settings pertain to larger, corporate environments where Samba is frequently deployed as a surrogate NT server, or to use authentication from an NT Primary Domain Controller.

One useful advanced feature that can even benefit a home network is to let Samba be the time server for the network. If your Linux box uses a utility such as rdate to update its clock regularly against an atomic time standard, Windows boxes can use Samba to set their local time. This requires a one liner in the [global] section time server = yes plus a small script on each Windows workstation with NET TIME \\SERVERNAME /YES /SET as an executable command.

A question that often arises with a home network is what possibilities exist if I have both Windows and Macintosh workstations? One solution for Macs is a product called DAVE from Thursby (http://www.thursby.com/). DAVE allows Macs to participate in a Windows SMB/CIFS network, and is reported to work successfully with Samba.

Graphical Samba management

To make Samba management easier, the Samba development team now includes SWAT, a browser based GUI management tool for managing Samba. With SWAT, you can stop/start Samba, drop connections, check status, reset passwords, and set all the smb.conf parameters (see Fig. 1).

Other Samba utilities

One thing to remember about Samba is that it works both ways. You can map Linux directories to Windows, but you can also map Windows shares and printers to Linux. In my home, for instance, I have my son's PC attached to the HP3P printer in the office because he uses it frequently for homework assignments and other printouts. I only use a printer occasionally so I use Samba to send my print jobs to the printer through his Windows 95 printer share

One of the Samba utilities smbclient, allows you to attach to Windows shares to do things like transfer files straight to a PC directly from the Linux command line Another utility smbtar, allows you to create tar backups of Windows shared directories or files across the network You can use this utility to back up your children's homework or spouse's directories to a standard Linux tape archive

Further reading

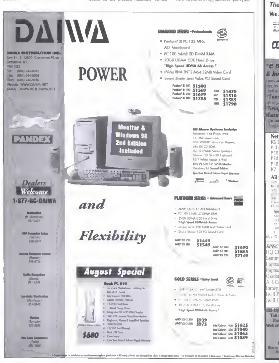
Samba is a feature rich product that can be deployed simply as in a home network, or deployed with sophistication, in a corporate environment. If you need to delve into its advanced offerings, there are several helpful sources of information The Samba Web site (http://www.samba.org) contains many online documents, in addition to latest versions of the program and source code.

The Samba documentation is normally installed by Red Hat Linux in /usr/doc/samba-[version] This should be your first documentation stop

There are now several excellent Samba books on the market, including *Samba Administrator's Handbook*, by Edward G. Brooksbank, IDG Books, 1999 (ISBN 0764546368, $37.99), *Samba Black Book*, by Dominic Baines, Coriolis, 1999 (ISBN 1576104559, $74.99) and *Using Samba*, by Kelly Collier Brown and Donham, O'Reilly & Associates, 1999 (ISBN 1565924495, $51.95) ❑

Next time: Connecting your home network to the Internet.

Gene Wilburn (gwilburn@home.com) is a Toronto-based IT manager musician and writer who operates a small farm of Linux servers Back issues of this series are available on his Web site at http://www.northernjourney.com.



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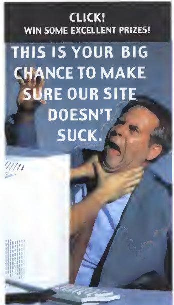
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I want my HDTV!

High-resolution digital TV is on the verge of the mainstream—but you still have to really, really want it

When I walk past the CHUM City TV station in downtown Toronto, I often look up at the station's satellite antenna farm, with dishes clustered like fat white aphids in the parking lot and on the top of the nearby buildings. I wonder if it's the shape of things to come for Canadian consumers as well. There is an increasing clutter of personal satellite Internet and TV options available to Canadians, and satellite-delivered media are increasingly viable, and popular.

The satellite option is shaping up to be the major contender for delivering standard resolution digital TV (with resolution equivalent to DVD video), and high-definition TV (with resolutions possible up to about 1,600x1,200 pixels) in the Canadian mainstream. Since we last looked at the satellite TV situation a year ago, there's been a considerable shift in the technology and the costs associated with digital TV and Internet services.

Digital TV is now quite affordable, and high-definition TV (HDTV), while still very expensive, is finding an audience with affluent "early adopters" and home-theatre enthusiasts. Over the next five years, HDTV will become much more affordable and by 2005-2007 will begin to completely displace the traditional NTSC video you watch via VHS tapes, cable or broadcast TV.

In a very small way, we've had our own antenna farm at our house in recent years, with the Bell DirecPC high-speed satellite Internet service, and, more recently, ExpressVu's HDTV service and its digital satellite TV. And the day before I wrote this, a representative of Look TV and high-speed Internet service was climbing around on our roof with a signal detector, checking to see if we could get a clear signal for the Look service. As it turned out surrounding trees and buildings blocked the Look signal, so we weren't able to test it for this article.

However, we aren't exactly deprived. In addition to the ExpressVu HDTV and digital satellite TV services, we also have the Rogers @Home cable modem service, the Bell Sympatico HSE digital subscriber line service, plus regular America Online and CompuServe dialup services. Call us addicted to bandwidth.

The most spectacular of the new satellite offerings is high-definition TV, or Hi Def or HDTV, as it's variously called. Four weeks ago, a moving van pulled up to our place and unloaded a huge 36-inch Thomson/RCA "HDTV ready" TV set/monitor. An ExpressVu technician came by and bolted two satellite dishes to the side of the house, one for HDTV, and the other for regular digital satellite TV. Two set top boxes were plunked on top of the new TV set, one for HDTV and the other for the regular satellite TV service.

A vast array of connectors on the set top boxes and the TV set support S-VHS, NTSC/composite, Component and RF video feeds, and analogue and digital stereo audio. We added a set of surround sound speakers to the mix to supplement the speakers built into the TV set. In addition to the feeds from the satellite dishes, we also successfully hooked up the VCR, Sony Playstation, Nintendo N64 and an SVGA laptop computer to the new TV set. The jumble of wires and cables snaking to and from this new altar of video is truly awesome. Our old second-hand 26-inch TV set began to gather dust in the corner.

Home is where the Hi-Def is

The HDTV service came with more than 200 channels of digital or analogue video content plus dozens of digital audio/music channels. In spite of the enormous choice, there were still frequent times when "there was nothing on." Be warned that while HDTV improves resolution and sound, it doesn't improve the underlying quality of what TV offers in the way of content.

Only two channels out of the 200 were broadcasting real HDTV, however. One HDTV channel simply looped demo reels of HDTV video clips (beautiful landscapes, flowers and pretty girls standing in sunny fields). The detail and crispness of images in HDTV is simply amazing. Of greater interest though was the second HDTV channel, which is a feed from a U.S. TV station that is broadcasting much of its content in HDTV format. This was where we got a real taste of what the future holds for television.

Watching the film *The Sixth Sense* in HDTV was literally an eye-opener. An HDTV movie on a big TV screen is a true home theatre experience fundamentally different from watching regular VHS, cable or broadcast TV. The amount of detail in the HDTV version offers a rich viewing experience comparable to being in a movie theatre, and viewing the same movie on VHS tape after seeing it in HDTV brings home what poor quality regular video is.

'That's more information than I needed, Vincent'

In some cases, viewing the HDTV version of a TV series episode was quite frightening, since the extra detail included a much more true life view of aging stars than we wanted to see. The U.S. television industry, under prodding from the U.S. government, has begun a massive switch to the HDTV format. Many new TV series are now being taped in HDTV so that when it becomes the standard and displaces current low resolution video over the next decade, HDTV versions of series will be available for the syndication market.

However, TV series are still being designed, lit and shot for low resolution. The result is that when watching a regular TV series in its HDTV version, during close up shots it is alarmingly obvious that many TV actors have really bad, fake teeth and hair, not to mention wattles, spots, bloodshot eyes, wrinkles, smudged makeup, and cosmetic surgery skin artifacts. The effect can be quite horrific. Yuck. Feature films, having been produced for high-resolution theatre projection, almost invariably offer much more comfortable HDTV viewing.

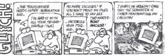
Cost of entry

As is the case with high-speed Internet service compared to regular dialup Internet service, once you've tried satellite digital TV or HDTV, it's very hard to be satisfied with the old low quality NTSC technology. However, HDTV is still cost prohibitive for the ordinary consumer. Satellite services are not too pricey by themselves: depending on the package, a satellite dish plus installation costs a few hundred dollars, and the basic digital TV package starts at around $35 a month, which is comparable to cable TV.

The real costs start if you decide to go for HDTV. The set top boxes, which are only now becoming available on the Canadian market, cost several times the price of a regular satellite box, and those fancy TV sets/monitors are incredibly pricey. The most beautiful large screen digital monitors, such as the Fujitsu 60-inch PlasmaVision displays, cost between $10,000 and $17,000. Video projectors, such as NEC or Compaq's latest models, cost between $5,000 and $11,000. Large HDTV-ready TV sets/monitors such as the Thomson/RCA models, cost between $3,000 and $8,000. Corporations, prestige retail locations, and rich home theatre fans form the current market for HDTV.

However, recent alliances between companies, such as Fujitsu and Hitachi, and new investments in fabrication facilities for HDTV-compatible display hardware, such as plasma screens, set top boxes, and digital light projection components for video projectors, point to a steady decline in the cost of HDTV displays. Canada's ATI is including HDTV support in its new generations of graphics chips, as the company bets on a faster than expected adoption of HDTV as the convergence of television and computing picks up speed.

As for me, ever since my first black and white TV set was struck by a bolt of lightning two years after I was married, I've been leery of television. My children, however, have no doubts. Digital is good, satellite is cool, bigger is better, and HDTV rules. ❑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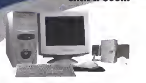

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